# Criteria for wetland prioritization and frame work for wetland monitoring in the state of Tamil Nadu

*Submitted to*
**Tamil Nadu Forest Department**

*Funded by*
**State Planning Commission**
**Tamil Nadu State Land Use Research Board**
Ezhilagam, Chepauk, Chennai 600 005


**Project Investigators**
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**Dr. Mahendiran Mylswamy**

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**Division of Wetland Ecology & SACON ENVIS Resource Partner onWetland Ecosystems**


**Final Report**

**March, 2019**


**Sálim Ali Centre for Ornithology and Natural History (SACON)**
**(A Centre of Excellence under the Ministry of Environment, Forest and Climate Change, Govt. of India)**
**Anaikatty Post, Coimbatore, Tamil Nadu - 641 108**

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## Executive Summary

Wetlands are increasingly being recognised for their vital role in nature and in natural processes that extend far beyond their geographical locations and boundaries. They are the highest producers of biomass compared to any other ecosystem type worldwide, far outstripping River estuaries, tropical rain forests and even coral reefs (Ricklefs and Miller 2000). India is the seventh largest country in the world, occupying only 2.4 % (i.e.3.28 million sq km) of the world's land area and supports over 16% of the world's population. The wetland ecosystems in India are spread over a wide range of varied climatic conditions, variously estimated to be occupying 1-5% of the geographic area supporting about a fifth of the known biodiversity. Like any other place in the world, there is a looming threat of unsustainable human pressures to the Indian wetlands. Looking into the urgent need for sustainable management of these assets, the Government of India has initiated many steps in terms of policies, programmes and plans for the preservation and conservation of these ecosystems.

The total wetland area estimated by the Space Applications Centre (SAC, ISRO), Ahmedabad is 15.26 M ha, which is 4.63% of the geographic area of the country. As per the 2011 National wetland atlas, Tamil Nadu has 6.92% of its land mass categorized under wetlands. These wetlands resources are mainly replenished by the seasonal rainfall during the northeast monsoon. The state is among the five Indian states that have over-exploited their ground water resource (Narayanamoorthy, 2010). According to Parvathi (2011), with a per capita water availability less than the national average, Tamil Nadu is one of the water starved states.

The Central government notified the Wetland (Conservation and Management) Rules, 2010, as a significant step to conserve, manage and to maintain the ecological character of the wetlands, without curtailing and restricting the legitimate and wise use of these ecosystems. The ammended Wetland Rules 2017 are in line with the 'Wise Use' philosophy of the Ramsar Convention, and they accord greater emphasis on maintaining ecological character and integrity of wetlands.

The Wetland Rules as specified in Rule 3 require the State Governments/UT administrations to prepare a wetland inventory within their jurisdiction and identify / prioritize wetlands for notification by the Central Government. Further, the State Governments/UT administrations are required to submit a brief document for each of the identified/prioritized wetlands.

The primary objective of the framework is to identify/prioritize wetlands for conservation. This will have to be supported by a *brief document* on each of the wetlands giving the information as specified in Rule 6 as follows.

(i) Broad geographic delineation of the wetland
(ii) Its zone of influence along with a map (accurate and to scale)
(iii) The size of wetland

For the present project funded by the State Planning Commission Tamil Nadu State Land Use research Board (SPC-TNSLURB), Sálim Ali Centre for Ornithology and Natural history (SACON) proposed that 100 wetlands would be prioritized for conservation after the

preparation of the brief document for wetlands. To achieve the target we identified 141 wetlands. The wetlands were selected based on the SACON ATLAS (Prasad *et al*., 2004), Scientific Literature, internet based bird data and Google imagery. The SACON Atlas did not have wetlands prioritized for almost 16 districts, while our emphasis was to give a fair representation to all the 32 districts of Tamil Nadu. Moreover, the Wetland Rules 2017 ruled out the wetlands form Protected Areas (PAs) or under the jurisdiction of the forest department, hence the reason for selecting 141 wetlands in total.

During the present study we prepared the *brief document* for maximum number of wetlands form the Kanchipuram District (15 wetlands) while a minimum of two wetlands were documented for the Nilgiris district. We physically visited all the wetlands selected and observed that almost 34 wetlands were completely dry for a minimum of three years to 10 years. This was attributed to lack of rainfall and diversion of channel waters. The wetlands however showed hydric soil characteristics indicating their importance in the landscape. Among the wetlands with water, we recorded Eutrophic, Mesotrophic and Oligotrophic wetlands that supported over 444 species of plants representing 95 families. The flora comprised of 31 Alien Invasive species including five invasive aquatic species, 27 fresh water plants and six marine plants. The 401 types of fauna were represented by Insects – 50 species, 82 species of Butterflies, 34 species of Odonata, six species of spiders, 34 species of fish species, four species of Amphibians, seven species of reptiles, 170 species of birds (92 Terrestrial, 60 Wetland birds and 18 Wetland dependant birds) and 14 species of domestic and wild mammals. Moreover the common problems that we documented for most of the wetlands include Reduction in area (Shrinkage), Reduction in depth (Siltation), Encroachments (Local Residents/Builders/Government), Algal blooms, Aquatic weeds, Decline or Loss of Fisheries, Eutrophication, Organic Pollution and Toxic Pollution. Apart form these, we observed illegal hunting of wild birds in around 20 wetlands.

For helping in managing the wetlands we mapped the zone of influence for each of the wetlands by plotting the contour maps along with the landscape elements. We marked a fixed 2 km buffer around the wetlands using Arc map, the SRTM data was downloaded form USGS to generate the elevation and contours around the wetlands while the Land Use Land Cover data of 2004-2005 was used form Landsat 5 and Resourcesat satellites. Based on the findings and the landscape characteristics around the wetlands we have suggested some remedial measures which include lake water quality treatment, installation and management of sewage treatment plants, weed removal, shoreline protection and management of catchment areas to check erosion.

Moreover, based on our primary studies we have calculated the Wetland Health Status score for each of the 141 wetlands taking into consideration the Ecosystem services, Land use patterns, threats and biodiversity values recorded during our field visits. Simultandously we have ranked the wetlands based on the score and have found that out of the 141 wetlands 23 wetlands need immediate attention while four among the 23 are in a critical state. Thirty two wetlands are in a fairly healthy state, although we recommend that all the wetlands be wisely used and sustainable conservation management plans be implemented.

# 1. Introduction

## Background

Wetlands are increasingly being recognised for their vital role in nature and in natural processes that extend far beyond their geographical locations and boundaries. They are the highest producers of biomass compared to any other ecosystem type worldwide, far outstripping River estuaries, tropical rain forests and even coral reefs (Ricklefs and Miller 2000). It is estimated that wetlands and other forms of deepwaters, cover about 6 per cent of the Earth's surface (Mitsch and Gosselink, 1993), and provide habitats for as much as 20 per cent of the plandt's various life-forms (Gopal, 1977). Owing to this attribute, wetlands are often referred as "biological supermarkets" (Gawler 2000, Prasad et al., 2002).

Wetlands are areas that are transitional between terrestrial and aquatic ecosystems where the water table is usually at or near the surface or the land is covered by shallow water. According to the Ramsar Convention on Wetlands of International Importance, wetlands are defined as "areas of marsh, fen, peat-land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters."

Wetlands are vital for their role in natural processes that extend beyond the geographical locations and boundaries. The wetlands help in sustaining human habitations while performing a range of functions that include initiating primary production, regulating hydrological regimes such as groundwater recharge and flood mitigation, initiating succession of the floral community and providing habitat to several life forms. Wetlands are a source of drinking water, food and livelihood to billions across the globe. Being an integral part of the cultural heritage, wetlands enhance the aesthetic value of the landscape.

India is the seventh largest country in the world, occupying only 2.4 % (i.e.3.28 million sq km) of the world's land area and supports over 16% of the world's population. The wetland ecosystems in India are spread over a wide range of varied climatic conditions, variously estimated to be occupying 1-5% of the geographic area supporting about a fifth of the known biodiversity. Like any other place in the world, there is a looming threat of unsustainable human pressures to the Indian wetlands. Looking into the urgent need for sustainable management of these assets, the Government of India has initiated many steps in terms of policies, programmes and plans for the preservation and conservation of these ecosystems.

At the behest of the Ministry of Environment and Forests (MoEF), Government of India, the scientific mapping of the wetlands of the country has been carried out by the Space Applications Centre (SAC, ISRO), Ahmedabad during 1992- 93 and 2011. The total wetland area estimated is 15.26 M ha, which is 4.63% of the geographic area of the country. As per the 2011 National wetland atlas, Tamil Nadu has 6.92% of its land mass categorized under wetlands.

The state of Tamil Nadu has limited water resources that are replenished by the seasonal rainfall during the northeast monsoon. The state is among the five Indian states that have over-exploited their ground water resource (Narayanamoorthy, 2010). According to Parvathi (2011), with a per capita water availability less than the national average, Tamil Nadu is one of the water starved states.

The Central government notified the Wetland (Conservation and Management) Rules, 2010, as a significant step to conserve, manage and to maintain the ecological character of the wetlands, without curtailing and restricting the legitimate and wise use of these ecosystems. The amended Wetland Rules 2017 are in line with the 'Wise Use' philosophy of the Ramsar Convention, and they accord greater emphasis on maintaining ecological character and integrity of wetlands.

## Purpose of the study

The Wetland Rules as specified in Rule 3 require the State Governments/UT administrations to prepare a wetland inventory within their jurisdiction and identify / prioritize wetlands for notification by the Central

Government. Further, the State Governments/UT administrations are required to submit a brief document for each of the identified/prioritized wetlands.

SACON conducted a project titled "Inland Wetlands of India" sponsored by the UNDP-MoEFCC, and brought out a comprehensive inland wetland inventory. We identified, mapped and classified wetland on a large spatial scale using available information and gathering additional data (Viyajan *et al.* 2004, Prasad *et al.* 2004). Based on the study done, SACON prioritized five potential Ramsar sites (viz. Kaliveli, Periakanmai & Sakkarakottai. Suchindrakulam, Thennampattu, and Uthiramerur) and 49 other major wetlands in Tamil Nadu for conservation.

**Objectives**

The primary objective of the framework is to identify/prioritize wetlands for conservation. This will have to be supported by a brief document on each of the wetlands giving the information as specified in Rule 6 as follows.

(i) Broad geographic delineation of the wetland
(ii) Its zone of influence along with a map (accurate and to scale)
(iii) The size of wetland

**Methodology**

To achieve the objective, SACON was approved a 2-phase project of six months each by the State Planning Commission Tamil Nadu State Land Use Research Board (SPC-TNSLURB). It was proposed that 100 wetlands would be prioritized for conservation after the preparation of the brief document for wetlands. To achieve the target we identified 141 wetlands among which, 80 were studied during the Phase I (November 2017 to April 2018) while 61 were studied during Phase II (May 2018 to October 2018). The wetlands were selected based on the SACON ATLAS (Prasad *et al*., 2004), Scientific Literature, e-bird database and Google imagery. The SACON Atlas did not have wetlands prioritized for almost 16 districts, while our emphasis was to give a fair representation to all the 32 districts of Tamil Nadu. In the process we surveyed a maximum of 15 wetlands form Kanchipuram District while a minimum of two wetlands were documented form the Nilgiris district. Moreover, the Wetland Rules 2017 ruled out the wetlands form Protected Areas or under the jurisdiction of the forest department, hence the reason for selecting 141 wetlands in total (Table 1.1). This document is based on our rapid survey that helped to prepare the *brief document*.

Table 1.1: The number of wetlands selected form the 32 districts of Tamil Nadu State.

| S. No | District | Total Number of Wetlands | SACON Atlas | Protected Area/Reservoir | Protected Area & Sanctuary |
|---|---|---|---|---|---|
| 1 | Ariyalur | 3 | - | - | |
| 2 | Chennai | 5 | - | 1 | Pallikaranai |
| 3 | Coimbatore | 6 | 4 | - | |
| 4 | Cuddalore | 4 | 2 | - | |
| 5 | Dharmapuri | 3 | - | - | |
| 6 | Dindigul | 3 | - | - | |
| 7 | Erode | 4 | 2 | 1 | Vellode Bird Sanctuary |
| 8 | Kanchipuram | 15 | 9 | 1 | |
| 9 | Kanyakumari | 6 | 4 | 2 | Suchindram, Theroor Bird Sanctuary |
| 10 | Karur | 3 | - | - | |
| 11 | Krishnagiri | 3 | - | - | |
| 12 | Madurai | 4 | 2 | - | |
| 13 | Nagapattinam | 3 | - | 1 | Point Calimere Wildlife Sanctuary |
| 14 | Namakkal | 3 | - | - | |
| 15 | Perambalur | 3 | - | - | |
| 16 | Pudukkottai | 3 | - | - | |
| 17 | Ramanathapuram | 6 | 4 | 1 | Chitrangudi Bird Sanctuary |
| 18 | Salem | 3 | - | | |

| | | | | | |
|---|---|---|---|---|---|
| 19 | Sivagangai | 4 | 1 | 1 | Vettangudi Bird Sanctuary |
| 20 | Thanjavur | 3 | - | - | |
| 21 | The Nilgiris | 2 | - | - | |
| 22 | Theni | 3 | - | - | |
| 23 | Thoothukudi | 5 | 2 | - | |
| 24 | Tiruchirappalli | 4 | 2 | - | |
| 25 | Tirunelveli | 6 | 2 | 1 | Koonthankulam Bird Sanctuary |
| 26 | Tirupur | 3 | 1 | - | |
| 27 | Tiruvallur | 7 | 2 | 1 | Pulicat Lake |
| 28 | Tiruvannamalai | 8 | 5 | 1 | Sathanur Reservoir |
| 29 | Tiruvarur | 5 | 3 | 2 | Udayamarthandapuram, Vaduvur Bird Sanctuary |
| 30 | Vellore | 3 | - | - | |
| 31 | Villupuram | 5 | 2 | 1 | Kaliveli Lake |
| 32 | Virudhunagar | 3 | - | - | |
| | | 141 | 47 | 13 | |

To comply with the time constraints, SACON undertook an extensive but rapid field work to assess the nature of the wetlands in terms of select indicators. A standardized sampling format was adopted and interactions with the forest officials formed the first step of the survey. Subsequently the team interacted with the Village Administrative Officers (VAO) to gain information on the wetlands in their jurisdiction including the Survey number, Field Management Book (FMB) Sketches, rights and privileges on the wetlands. For the interactions with the VAO we followed the draft questionnaire (Appendix 1) designed by the National Wetland Conservation Program (NWCP) on the National River Conservation Directorate (NRCD) portal. Interactions were also made with the local inhabitants, farmers, shepherds and cattle herders eliciting information as per the questionnaires supplemented the information on each of the wetlands.

We physically visited all the wetlands selected, adopting a strategy of time-constrained random walk spending a fixed duration of 30 minutes by three researchers at every wetland recording the flora, fauna and other aspects relating to the wetland to make a spot assessment of the ecological status following standard methods (Table1.2). To maintain the clarity of visual observations along the wetlands, the flora and fauna were observed form within the wetland and up to fixed constant a distance of 30 meters form the edge of the wetland boundary towards the landward side. Indicative parameters, Total Dissolved Solids (TDS), Conductivity, Salinity, Light Penetration, Water temperature and Air temperature were measured *in situ* using respective digital meters and Secchi disk. Dissolved Oxygen was assessed in the field using Wrinklers method. Apart, form the field data, sediment samples were collected and analysed for pH, Colour, TDS, Conductivity, Lesser elements like Na, K, Li and Ca in the Wetland Ecology laboratory at SACON. In addition, macrophytes as floating, submerged and emergent were also recorded in terms of coverage of the area and species. Similarly, the birds and obvious terrestrial plant species were also recorded. Based on the field observation each wetland was categorized for their trophic status as oligotrophic (low in nutrients), mesotrophic (with medium level nutrients), and eutrophic (high levels of nutrients) based on the classification originally suggested by Thienemann (1925). After ground truthing, the wetlands were delineated and presented as digital images drawing information form Google Earth, Bhuvan and LISS III imageries.

Table 1.2: Sampling technique used for floral and faunal enumeration

| **Taxa** | **Sampling Method** | **Reference** |
|---|---|---|
| Insects | Visual encounter survey (Search) | Subramanian, 2009; Narendra & Kumar, 2006; |
| Butterflies | Visual encounter survey (Search) | Balmer, 2006; Kehimkar, 2008 |
| Moths | Visual encounter survey (Search) | Balmer, 2006; Vaylure, 2018 |
| Arachnida | Visual encounter survey (Search) | Sebastian, 2009 |
| Other Invertebrates | Visual encounter survey (Search) | Tonapi, 1980 |
| Amphibians | Visual encounter survey (Search) | Daniels, 2005 |
| Reptiles | Visual encounter survey (Search) | Whitaker & Captain, 2008 |
| Birds | Point count, Random walk & Opportunistic observation | Bibby *et al.,* 1993; Ali & Ripley 1983; Grimmett *et al.,*1999 |
| Mammals | Tracks, signs and visual encounter survey | Bang *et al* 1972; Menon, 2009 |
| Flora | Opportunistic observation, Random search | Smith, 2011; Hill *et al.,* 2005; Menon & Bagla, 2009 |

The questionnaire was also used to interview local people or have community group discussions to identify the ecosystem services, disturbance and threats to the wetland. Data on socio-economic and cultural values of the wetlands were suplemented by observing the direct utilisation of wetland resources (eg. water extraction, fishing, etc) by the local community.

To prepare the maps, georeferencing and digitization of 32 districts for updated boundaries of Tamil Nadu was undertaken and projected to World Geographic System (WGS) 1984. The wetland boundaries of all the 141 wetlands were extracted form google earth pro as a keyhole markup language (kml) format. Using Arcmap 10.5 software the extracted 141 wetlands kmls were converted into shape file. As per the Wetland Rules 2017 the zone of influence is the part of the catchment area of the wetland in which developmental activities induce adverse changes in ecosystem structure and ecosystem services. To estimate the same a fixed 2 km buffer was generated on the Arc map using buffer analysis tool for demarcating the zone of influence around each wetlands. SRTM [Shuttle Radar Topography Mission] data was downloaded form USGS for creating elevation and generation of contour with 5 m intervals. The land use & land cover data was a classified data of 2004-2005 time period obtained form Landsat 5 and Resourcesat satellites where the (Enhanced Thematic Mapping Plus) ETM+, LISS III (Linear Image Scanning Sensor) are the sensors with the spatial resolution of 30 m for ETM+ and 23.5 m for LISS III respectively.




Map 1.2: Distribution of wetlands selected for the study across Tamil Nadu State.

The maps generated form the above procedure provided the Landscape elements, the elevation and contours around the wetlands. The landscape elements provide the information on the land use around the wetland while the elevation and contour map helps assess the influence to and of the wetland. The 2 Km buffer as zone of influence was arrived at based on the contours and elevation around the wetlands that were influenced by the development and other human activities. These maps can help in management planing of the wetlands.

**Criteria for prioritization**

Based on the interactions with the community at the field level and the questionnaire we evolved a criteria for prioritization of the wetlands and calculated the Wetland Health Status (WHS) score. This was done by taking into consideration the community aspects and our observations in the field. Firstly, we weighed the views of the community for the Ecosystem services on a 10 point scale (where, 0 – Low and 10 - High). The second level we weighed our observations on Change of Land Use patterns and Threats to the wetlands on the same 10 point scale and the beneficial aspects were considered as positive and the harmful components were calculated as negative. The two scores were than combined and added to assess the habitat provided based on the Biodiversity data and water and soil characteristics. The biodiversity value was calculated on the basis of the total flora and fauna recorded for the wetland divided against the total flora and fauna recorded form the district during our field study. Both scores were totalled to arrive at the final wetland health status score. Based on the Wetland Health Status (WHS) Score we have ranked (Rank 1- Bad to Rank 141 - Good) the wetlands and prioritised them for conservation.

**Observations**

On the basis of our field visits and field interactions the following are the brief observations of the study.

Form the 141 wetlands covering 32 districts, maximum number of 15 wetlands were surveyed in Kanchipuram and a minimum of two form the Nilgiris District. The overall characteristics of the wetlands surveyed are.

- ✓ The wetlands were either Natural (Inland) or Human Made
- ✓ 29 wetlands were dry and of the remaining 112 wetlands 32 were wetlands with water throughout the year while the remaining 80 wetlands are Seasonal Intermittent lakes
- ✓ Three type of wetlands: Eutrophic - 15, Mesotrophic - 59, Oligotrophic – 47, Status unknown - 19
- ✓ Encroachment levels recorded were - High – 33 wetlands, Medium – 30 wetlands, Low – 72 wetlands and No encroachment observed in 6 wetlands.
- ✓ Industry or industrial setup was observed around 30 wetlands.

The wetlands studied have a vast diversity of flora and fauna (Table 1.3) that includes 444 species of plants including the invasive species where as the fauna comprises of 401 different species representing Arthropods, Arachnida, Fish, Amphibians, Reptiles Birds and Mammals (Plates 94 - 131). We recorded several species of Threatened fauna as per the IUCN criteria as well as many Schedule species as per the Wild life Protection Act of 1972 (Table 1.4). The flora was also categorized into Native and Alien species.

Based on the species origin and distribution the floral species were further categorized into

- ❖ Native Species – 339
- ❖ Alien Invasive Species – 31
- ❖ Alien Non-Invasive Species (including Naturalised) – 48
- ❖ *Eichornia crassipes*, *Ipomoea aquatica*, *Ipomea obscura*, *Ipomea staphylina*, *Prosopis juliflora* are the wide spread Alien Invasive species recorded.

Common Issues & Threats in the Wetland (Plates 132 - 149) that were observed are

- ✓ Reduction in area (Shrinkage)
- ✓ Reduction in depth (Siltation)
- ✓ Encroachments (Local Residents/Builders/Government)
- ✓ Algal blooms
- ✓ Aquatic weeds
- ✓ Invasive species
- ✓ Decline or Loss of Fisheries

- ✓ Eutrophication
- ✓ Organic Pollution
- ✓ Toxic Pollution
- ✓ Signs of Hunting for Water birds observed in almost 20 wetlands

During our field visits we conducted a questionnaire survey where we interacted with the local community, the village administration wherever possible as well as the forest department. Based on the status of the wetlands we documented wetlands in several stages of land use change. However there were some wetlands that did not have water at all for a long spell of time. List of Dry Wetlands in Tamil Nadu for over 5 years but still have the hydric property are as given in Table 1.5. Our study of the soil characteristics indicate the existence of hydric properties and hence necessitate protection form landuse change, as these wetlands have the potential of revival.

The subsequent sections we have given the details of each of the wetlands as per the NWCP format along with the water and soil parameters for the wetlands where it was possible to assess.

Table 1.3: Total Flora and Fauna recorded form the 141 wetlands selected for the study in Tamil Nadu State.

| S. No | District | Name of the Wetland | Plants (Invasive) | Arthropoda | Odonata | Lepidoptera | Arachnida | Fishes & Crustacean | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Elandaikudam Lake | 51(12) | 7 | 10 | 7 | 2 | 10 | 0 | 2 | 25 | 5 |
| 2 | Ariyalur | Venganur Lake | 33(10) | 4 | 4 | 11 | 1 | 6 | 0 | 2 | 34 | 4 |
| 3 | | Sukran Lake | 32(3) | 0 | 3 | 6 | 0 | 6 | 1 | 0 | 10 | 4 |
| 4 | | Velacherry Lake | 34(11) | 1 | 5 | 8 | 0 | 12 | 0 | 3 | 8 | 4 |
| 5 | | Madippakkam Lake | 30(6) | 8 | 4 | 2 | 0 | 4 | 0 | 2 | 13 | 7 |
| 6 | Chennai | Pallikarnai Marsh | 30(8) | 5 | 7 | 18 | 1 | 13 | 0 | 2 | 43 | 4 |
| 7 | | Korattur Lake | 51(9) | 6 | 8 | 16 | 1 | 13 | 0 | 3 | 35 | 5 |
| 8 | | Ambattur Lake | 33(7) | 4 | 7 | 2 | 0 | 4 | 0 | 1 | 16 | 4 |
| 9 | | Kovaipudur Lake | 54(11) | 4 | 5 | 9 | 2 | 13 | 0 | 2 | 41 | 5 |
| 10 | | Sulur Lake | 77(14) | 12 | 4 | 36 | 2 | 14 | 0 | 3 | 49 | 4 |
| 11 | | Singanallur Lake | 45(11) | 10 | 7 | 31 | 2 | 15 | 0 | 3 | 40 | 4 |
| 12 | Coimbatore | Perur Kulam | 52(10) | 3 | 4 | 3 | 0 | 13 | 0 | 1 | 18 | 4 |
| 13 | | Kurichi Lake | 46(9) | 9 | 9 | 16 | 0 | 10 | 0 | 2 | 39 | 6 |
| 14 | | Ukkadam Lake | 69(12) | 9 | 8 | 15 | 0 | 12 | 0 | 2 | 38 | 4 |
| 15 | | Veeranam Tank | 37(6) | 6 | 6 | 9 | 1 | 13 | 0 | 3 | 26 | 5 |
| 16 | Cuddalore | Bahour Lake | 53(14) | 5 | 10 | 9 | 2 | 13 | 0 | 2 | 21 | 4 |
| 17 | | Wellington Lake | 31(5) | 6 | 3 | 5 | 1 | 4 | 0 | 1 | 20 | 3 |
| 18 | | Perumal Lake | 35(11) | 4 | 4 | 5 | 0 | 6 | 0 | 1 | 24 | 5 |
| 19 | | Dharmapuri Lake | 47(11) | 3 | 4 | 5 | 0 | 2 | 0 | 2 | 26 | 5 |
| 20 | Dharmapuri | Thumbala Halli Lake | 43(8) | 7 | 6 | 2 | 0 | 12 | 0 | 1 | 21 | 4 |
| 21 | | Kadagathur Lake | 16(5) | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 8 | 2 |
| 22 | | Vaiyapuri Tank | 42(9) | 6 | 6 | 13 | 2 | 14 | 0 | 1 | 20 | 5 |
| 23 | Dindigul | Kodaikanal Lake | 32(3) | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 8 | 2 |
| 24 | | Idumban Kulam | 45(9) | 10 | 8 | 7 | 1 | 5 | 0 | 1 | 29 | 4 |
| 25 | | Vellode Bird Sanctuary | 64(9) | 11 | 14 | 16 | 2 | 12 | 0 | 2 | 33 | 4 |
| 26 | Erode | Aval poondarai Lake | 21(10) | 2 | 4 | 5 | 0 | 0 | 0 | 2 | 16 | 3 |
| 27 | | Kavilipalayam Lake | 42(10) | 6 | 9 | 18 | 1 | 3 | 2 | 2 | 13 | 3 |
| 28 | | Anthiyur Periya Yeri | 42(9) | 4 | 5 | 5 | 1 | 8 | 1 | 1 | 13 | 5 |
| 29 | | Chemabarambakkam Lake | 64(16) | 6 | 7 | 17 | 1 | 10 | 0 | 3 | 43 | 5 |
| 30 | | Uthiramerur Lake | 52(8) | 16 | 8 | 26 | 2 | 13 | 3 | 3 | 34 | 4 |
| 31 | | Parandur Lake | 44(10) | 5 | 7 | 18 | 2 | 20 | 0 | 3 | 26 | 3 |
| 32 | | Govindavadi Lake | 54(11) | 11 | 7 | 28 | 1 | 10 | 2 | 3 | 32 | 4 |
| 33 | | Kooram Lake | 71(13) | 17 | 8 | 32 | 3 | 17 | 1 | 4 | 40 | 3 |
| 34 | | Uthukadu Lake | 58(9) | 10 | 11 | 29 | 2 | 21 | 1 | 4 | 30 | 3 |
| 35 | | Thirupulivanam Lake | 64(13) | 14 | 7 | 23 | 2 | 18 | 0 | 2 | 37 | 5 |
| 36 | Kanchipuram | Magaral Lake | 57(10) | 6 | 7 | 23 | 1 | 21 | 0 | 3 | 21 | 3 |
| 37 | | Sri Perumbudur Lake | 42(9) | 5 | 7 | 12 | 1 | 11 | 0 | 3 | 19 | 3 |
| 38 | | Theneri Lake | 50(8) | 5 | 8 | 15 | 2 | 18 | 0 | 2 | 18 | 4 |
| 39 | | Kolavai Lake | 78(15) | 11 | 12 | 20 | 2 | 15 | 0 | 3 | 46 | 5 |
| 40 | | Great Salt Lake | 54(12) | 20 | 9 | 24 | 2 | 17 | 0 | 3 | 59 | 5 |
| 41 | | Madhuranthakam Lake | 71(10) | 9 | 11 | 22 | 0 | 16 | 0 | 2 | 32 | 4 |
| 42 | | Odiyur Lake | 49(8) | 4 | 4 | 16 | 0 | 0 | 0 | 1 | 31 | 5 |
| 43 | | Sirudavoor Lake | 29(8) | 6 | 6 | 12 | 0 | 5 | 0 | 1 | 14 | 5 |
| 44 | Kanyakumari | Suchindram kulam | 67(12) | 8 | 5 | 25 | 2 | 16 | 0 | 1 | 41 | 2 |
| 45 | | Theroor Lake | 54(10) | 6 | 11 | 19 | 1 | 18 | 0 | 1 | 33 | 3 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | | Vembanur Lake | 65(8) | 2 | 5 | 8 | 1 | 12 | 0 | 1 | 23 | 2 |
| 47 | | Manavalakurichi kulam | 41(9) | 1 | 5 | 7 | 1 | 11 | 0 | 2 | 22 | 1 |
| 48 | | Sengulam | 60(10) | 7 | 7 | 5 | 1 | 4 | 0 | 1 | 9 | 4 |
| 49 | | Narikulam | 80(14) | 12 | 9 | 7 | 1 | 7 | 0 | 1 | 17 | 2 |
| 50 | | Panjapatti Lake | 33(5) | 4 | 3 | 5 | 1 | 0 | 0 | 1 | 16 | 4 |
| 51 | Karur | Uppidamangalam Lake | 9(3) | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 6 | 0 |
| 52 | | Vellianai Periyakulamkulam | 24(5) | 4 | 2 | 4 | 0 | 0 | 0 | 1 | 5 | 2 |
| 53 | | Barur Lake | 38(9) | 7 | 6 | 14 | 2 | 12 | 0 | 2 | 33 | 3 |
| 54 | Krishnagiri | Pongoundapara Lake | 9(4) | 0 | 3 | 3 | 0 | 3 | 0 | 1 | 22 | 4 |
| 55 | | Rama Naicken Lake | 9(4) | 9 | 6 | 10 | 0 | 12 | 0 | 1 | 25 | 4 |
| 56 | | Vandiyur Lake | 47(10) | 4 | 6 | 7 | 1 | 7 | 0 | 1 | 23 | 3 |
| 57 | Madurai | T. Kunnathur Lake | 32(8) | 4 | 2 | 16 | 0 | 0 | 0 | 1 | 16 | 3 |
| 58 | | Periyakulam Kanmai (Thenur) | 24(9) | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 12 | 1 |
| 59 | | Urapanur Periyakanmai | 34(5) | 3 | 2 | 3 | 0 | 0 | 0 | 1 | 14 | 3 |
| 60 | Nagapattinam | Point Calimere Wildlife Sanctuary | 22(5) | 4 | 4 | 10 | 3 | 19 | 0 | 1 | 35 | 8 |
| 61 | | Keeran Lake | 36(10) | 2 | 3 | 6 | 2 | 9 | 0 | 1 | 27 | 1 |
| 62 | | Embavai Perunthottam Lake | 59(8) | 4 | 5 | 3 | 0 | 8 | 0 | 0 | 22 | 0 |
| 63 | | Oomayampatti Lake | 43(11) | 5 | 3 | 7 | 2 | 11 | 0 | 2 | 20 | 5 |
| 64 | Namakkal | Amirthasagaram Lake | 19(3) | 4 | 5 | 10 | 1 | 5 | 0 | 2 | 24 | 3 |
| 65 | | Puthur Lake | 16(2) | 1 | 2 | 1 | 0 | 0 | 0 | 1 | 6 | 0 |
| 66 | Nilgiris | Ooty Lake | 24(40 | 1 | 0 | 6 | 0 | 15 | 0 | 2 | 27 | 2 |
| 67 | | Marlimund Lake | 26(2) | 8 | 7 | 6 | 1 | 3 | 0 | 0 | 15 | 2 |
| 68 | | Athiyur Lake | 41(12) | 5 | 6 | 6 | 2 | 11 | 1 | 2 | 10 | 4 |
| 69 | Perambalur | Arumbavur Big Lake | 36(8) | 3 | 3 | 5 | 0 | 0 | 0 | 3 | 24 | 4 |
| 70 | | Kurumbalur Lake | 36(5) | 0 | 3 | 7 | 0 | 0 | 0 | 1 | 6 | 4 |
| 71 | | Annavasal Periyakulam Lake | 14(9) | 4 | 2 | 9 | 1 | 0 | 0 | 1 | 17 | 5 |
| 72 | Pudukkottai | Seiyanam Periya Eri | 25(3) | 5 | 6 | 12 | 0 | 7 | 1 | 1 | 22 | 3 |
| 73 | | Ponpethi Lake | 32(4) | 7 | 6 | 12 | 0 | 6 | 1 | 2 | 32 | 3 |
| 74 | | Sakkarakottai Periyakanmai | 63(9) | 2 | 2 | 5 | 1 | 0 | 0 | 1 | 19 | 3 |
| 75 | | Uthirakosamangai Lake | 49(9) | 9 | 5 | 6 | 1 | 8 | 0 | 1 | 21 | 2 |
| 76 | | R S Mangalam Lake | 31(9) | 5 | 4 | 6 | 2 | 0 | 1 | 2 | 12 | 4 |
| 77 | Ramanathapuram | Chitrangudi Bird Sanctuary | 35(10) | 9 | 4 | 11 | 2 | 5 | 0 | 2 | 43 | 2 |
| 78 | | Brahmanankulam | 6(2) | 0 | 3 | 4 | 0 | 0 | 0 | 3 | 26 | 3 |
| 79 | | Melayakudi Kanmai | 12(3) | 3 | 2 | 5 | 0 | 0 | 0 | 2 | 9 | 0 |
| 80 | | Vadamandri Lake | 40(9) | 9 | 10 | 9 | 3 | 13 | 1 | 2 | 26 | 4 |
| 81 | Salem | Panai Eri | 27(7) | 3 | 3 | 6 | 1 | 0 | 0 | 1 | 7 | 2 |
| 82 | | Panamarathupatti Lake | 50(10) | 19 | 13 | 29 | 2 | 0 | 0 | 4 | 19 | 4 |
| 83 | | Vettangudi Bird Sanctuary | 53(13) | 9 | 7 | 25 | 1 | 6 | 0 | 1 | 42 | 4 |
| 84 | Sivaganga | Piravalur Kanmai | 25(7) | 2 | 3 | 8 | 0 | 0 | 0 | | 10 | 4 |
| 85 | | Kattikulam Kanmai | 31(5) | 6 | 6 | 9 | 1 | 6 | 0 | 1 | 17 | 3 |
| 86 | | Andakudi Kanmai | 21(2) | 3 | 4 | 7 | 0 | 5 | 0 | 1 | 20 | 5 |
| 87 | | Kallaperambur Lake | 37(9) | 7 | 4 | 9 | 2 | 11 | 1 | 3 | 32 | 4 |
| 88 | Thanjavur | Pannavayal Eri | 35(9) | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 17 | 2 |
| 89 | | Sendakkottai Lake | 20(4) | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 6 | 0 |
| 90 | | Kamarajapuram Lake | 28(12) | 4 | 3 | 4 | 2 | 0 | 0 | 2 | 11 | 4 |
| 91 | Theni | Periyakulam Kanmai | 38(8) | 9 | 13 | 8 | 1 | 8 | 2 | 2 | 16 | 3 |
| 92 | | Thamarai Kulam | 55(12) | 8 | 3 | 8 | 0 | 10 | 0 | 1 | 18 | 4 |
| 93 | | Seydunganallur kulam | 43(7) | 14 | 10 | 21 | 2 | 11 | 0 | 1 | 32 | 4 |
| 94 | | Sivagalai kulum | 34(9) | 6 | 5 | 13 | 1 | 12 | 0 | 1 | 37 | 3 |
| 95 | Thoothukudi | Karungulam lake | 51(11) | 8 | 11 | 25 | 2 | 11 | 0 | 1 | 35 | 4 |
| 96 | | Tirupani Puthantharuvai Tank | 12(4) | 2 | 2 | 4 | 0 | 0 | 0 | 1 | 8 | 3 |
| 97 | | Kadamba kulam | 45(10) | 6 | 9 | 10 | 1 | 5 | 0 | 2 | 36 | 2 |
| 98 | | Koothapar big tank | 61(11) | 8 | 10 | 28 | 2 | 10 | 0 | 2 | 41 | 5 |
| 99 | Tiruchirappalli | Gundur big tank | 47(10) | 11 | 9 | 10 | 2 | 11 | 2 | 2 | 45 | 4 |
| 100 | | Alathudayanpatti Lake | 34(10) | 3 | 3 | 3 | 0 | 3 | 1 | 1 | 10 | 4 |
| 101 | | Valavanthankottai Tank | 28(5) | 6 | 3 | 4 | 0 | 3 | 0 | 1 | 14 | 2 |
| 102 | | Koonthakulam sanctuary | 54(11) | 7 | 5 | 14 | 2 | 7 | 0 | 3 | 58 | 4 |
| 103 | | Ariyakulam/Melakulam | 38(6) | 3 | 5 | 16 | 2 | 10 | 0 | 1 | 37 | 4 |
| 104 | Tirunelveli | Puthukulam | 49(12) | 6 | 3 | 13 | 2 | 10 | 0 | 2 | 57 | 4 |
| 105 | | V.M.Chatram Lake | 34(9) | 7 | 9 | 17 | 2 | 7 | 0 | 1 | 29 | 4 |
| 106 | | Vijayanarayanam Tank | 52(9) | 1 | 5 | 5 | 0 | 10 | 0 | 1 | 29 | 4 |
| 107 | | Chetruthamarai Kulam | 37(7) | 7 | 6 | 5 | 1 | 15 | 1 | 1 | 31 | 4 |
| 108 | | Koolipalayam Reservoir | 49(8) | 12 | 11 | 19 | 2 | 10 | 0 | 2 | 49 | 5 |
| 109 | Tirupur | Kongur Idaichikulam | 45(10) | 3 | 2 | 9 | 1 | 3 | 0 | 1 | 16 | 3 |
| 110 | | Manikapuram Kulam | 50(10) | 12 | 8 | 16 | 1 | 0 | 0 | 3 | 51 | 4 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 111 | Tiruvallur | Mapedu Periaeri | 54(10) | 5 | 7 | 19 | 2 | 15 | 0 | 2 | 37 | 5 |
| 112 | | Poondi Lake | 60(9) | 9 | 12 | 19 | 3 | 9 | 0 | 3 | 30 | 5 |
| 113 | | Puzhal Lake | 40(10) | 7 | 7 | 16 | 1 | 20 | 0 | 2 | 32 | 5 |
| 114 | | Cholavaram Tank | 46(10) | 4 | 7 | 17 | 0 | 14 | 1 | 3 | 27 | 5 |
| 115 | | Pulicat Lake | 28(9) | 6 | 6 | 9 | 0 | 13 | 0 | 2 | 24 | 5 |
| 116 | | Coovam Lake | 56(7) | 13 | 9 | 21 | 2 | 12 | 0 | 3 | 37 | 5 |
| 117 | | Padur-Thangal Eri | 60(10) | 8 | 9 | 8 | 0 | 0 | 0 | 2 | 44 | 4 |
| 118 | Tiruvannamalai | Ponnur Lake | 44(10) | 3 | 9 | 3 | 1 | 13 | 3 | 2 | 22 | 0 |
| 119 | | Thennampattu Lake | 63(12) | 7 | 9 | 18 | 2 | 11 | 0 | 2 | 23 | 3 |
| 120 | | Vakkadai Lake | 37(8) | 14 | 6 | 14 | 3 | 19 | 0 | 2 | 34 | 4 |
| 121 | | Kappalur Lake | 49(8) | 9 | 10 | 9 | 2 | 13 | 2 | 2 | 37 | 5 |
| 122 | | Dusimamandoor Lake | 39(6) | 5 | 9 | 13 | 1 | 13 | 1 | 2 | 26 | 4 |
| 123 | | Sathanur Reservoir | 44(8) | 6 | 4 | 7 | 0 | 14 | 0 | 2 | 18 | 3 |
| 124 | | Pelasure Lake | 34(5) | 5 | 4 | 3 | 0 | 5 | 0 | 1 | 22 | 5 |
| 125 | | Anakkavoor Lake | 32(7) | 6 | 6 | 9 | 0 | 7 | 0 | 1 | 29 | 4 |
| 126 | Tiruvarur | Thirumeni Lake | 46(5) | 7 | 5 | 12 | 1 | 9 | 0 | 2 | 31 | 4 |
| 127 | | Udayamarthandapuram Bird Sanctuary | 93(15) | 4 | 3 | 7 | 2 | 9 | 0 | 1 | 27 | 5 |
| 128 | | Vaduvur Bird Sanctuary | 56(13) | 19 | 8 | 18 | 2 | 7 | 0 | 1 | 47 | 5 |
| 129 | | Vadaku Eri | 44(9) | 1 | 3 | 4 | 0 | 7 | 1 | 1 | 11 | 4 |
| 130 | | Moovanallur Lake | 30(3) | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 5 | 2 |
| 131 | Vellore | Kaveripakkam Lake | 38(9) | 7 | 7 | 9 | 2 | 11 | 0 | 2 | 24 | 3 |
| 132 | | Mahendravadi Lake | 31(8) | 4 | 6 | 4 | 0 | 4 | 0 | 1 | 14 | 4 |
| 133 | | Kalavai Lake | 41(8) | 5 | 5 | 17 | 0 | 6 | 2 | 1 | 22 | 5 |
| 134 | Villupuram | Mel Malayanur Lake | 25(6) | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 8 | 4 |
| 135 | | Sandapet Lake | 43(8) | 6 | 5 | 6 | 1 | 4 | 2 | 1 | 20 | 5 |
| 136 | | Kaliveli Lake | 33(8) | 8 | 8 | 10 | 1 | 19 | 0 | 2 | 55 | 5 |
| 137 | | Ousteri Lake | 39(7) | 8 | 6 | 11 | 1 | 16 | 0 | 2 | 28 | 3 |
| 138 | | Valathy Lake | 42(9) | 12 | 15 | 18 | 2 | 12 | 0 | 2 | 33 | 5 |
| 139 | Virudhunagar | Ammapatti Lake | 46(14) | 12 | 3 | 11 | 2 | 9 | 0 | 2 | 28 | 5 |
| 140 | | Periyakulam Kanmari (Srivilliputhur) | 33(7) | 4 | 8 | 5 | 0 | 0 | 1 | 1 | 27 | 3 |
| 141 | | Viragasamuthiram Kanmai | 48(10) | 7 | 5 | 3 | 1 | 6 | 1 | 1 | 21 | 5 |
| | Total | | 444(35) | 50 | 34 | 82 | 6 | 34 | 4 | 7 | 170 | 14 |

Table 1.4: Flora and Faunal Diversity recorded during the Field Visit is categorized as follows

| S. No | Flora/Fauna | Total Number of Species | IUCN Category | WPA 1972 |
|---|---|---|---|---|
| 1 | Flora | 444 | EN-1, VU-2; EW-1; LC-81; | |
| 2 | Arthropoda & Arachnida | 56 | - | |
| 3 | Lepidoptera | 82 | | Sch I - 4, Sch II - 6, Sch IV - 1 |
| 4 | Odonates | 34 | - | |
| 5 | Fishes | 34 | LC- 22, NE - 3, NT -1, VU -1 | |
| 6 | Amphibians | 4 | LC - 4 | Sch IV - 4 |
| 7 | Reptiles | 7 | LC - 7 | Sch II - 2 |
| 8 | Birds | 170 | NT - 8, V - 1, LC - 161 | Sch I - 12, Sch IV - 148 |
| 9 | Mammals | 14 | LC - 7 | Sch I - 1, Sch II - 2, Sch III - 2, Sch IV - 2 |

Table 1.5: List of wetlands that are dry for a minimum of 5 years.

| S.No | District | Wetland | Trophic status |
|---|---|---|---|
| 1 | Dharmapuri | Kadagathur Lake | not known |
| 2 | Erode | Avalpoondurai Lake | not known |
| 3 | Kanchipuram | Magaral Lake | Eutrophic |
| 4 | Karur | Panjappatti Lake | Eutrophic |
| 5 | | Uppidamangalam Lake | not known |
| 6 | | Velliyanai Lake | not known |
| 7 | Madurai | T. Kunnathur | Eutrophic |
| 8 | | Periyakulam Kanmai (Thenur) | not known |
| 9 | | Urapanur Periyakanmai | not known |
| 10 | Namakkal | Puthur Lake | not known |
| 11 | Perambalur | Kurumbalur Lake | not known |
| 12 | | Arumbavur Big Lake | not known |
| 13 | Puthukottai | Annavasal Periyakulam | Mesotrophic |
| 14 | Ramanathapuram | Sakkarakottai Bird Sanctuary | Mesotrophic |
| 15 | | Rajasingamangalam | Eutrophic |

| | | | |
|---|---|---|---|
| 16 | | Melayakudi Kulam | not known |
| 17 | Salem | Panai Eri | not known |
| 18 | | Panamarathupatti Lake | not known |
| 19 | Sivagangai | Piravalur Kanmai | Mesotrophic |
| 20 | Thanjavur | Sendakkottai Lake | not known |
| 21 | | Panavayal Eri | not known |
| 22 | | Kallaperambur Lake | Mesotrophic |
| 23 | Theni | Kamarajapuram Lake | Eutrophic |
| 24 | Thoothukudi | Tirupani Puthantharuvai Tank | not known |
| 25 | Thiruvarur | Vadakku Eri | not known |
| 26 | | Moovanallur Lake | not known |
| 27 | Tiruchirappalli | Valavanthankottai Tank | not known |
| 28 | Tirupur | KongurIdaichikulam | not known |
| 29 | Villupuram | Mel Malayanur Lake | not known |

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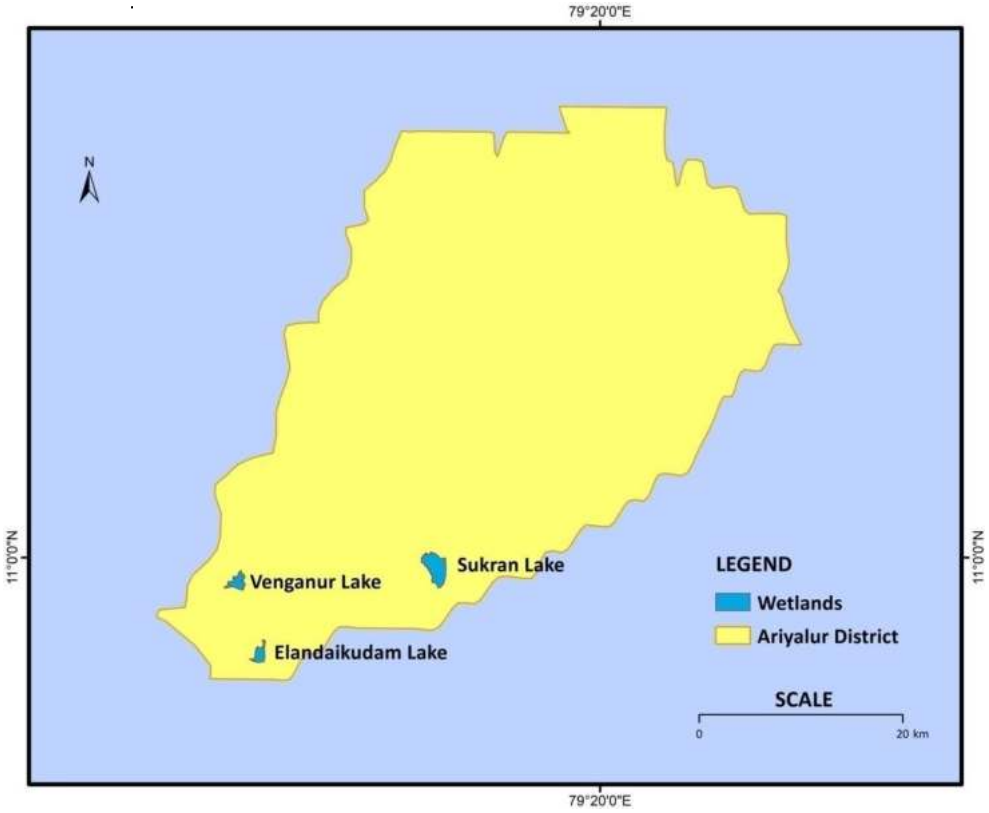
# 2: Ariyalur district

**Introduction**

Ariyalur district is bordered by the districts of Cuddalore to the north and northeast, Nagapattinam to the east, Thanjavur to the south and south-east, Tiruchirapalli to the south-west and Perambalur to the west. Gangaikonda Cholapuram built by the King Rajendra Cholan of Chola Empire, and UNESCO World Heritage site is situated in the district. This district is also known for its rich prehistoric fossils. Many fossils of gigantic Molluscs, Jawed fishes were discovered here.

The total geographic area of Ariyalur district is 1946.7 sq km. Total area under wetland is 11042 ha, which includes 637 small wetland (<2.25 ha). Tanks/Ponds occupy 31.43 % of wetland area. The other wetland types are; River/Stream (4177 ha) and Lakes/ponds (2657 ha).

Since the SACON atlas did not have any wetland prioritized for the district, for the present study the wetlands selected were on the basis of their size and proximity to the Kariveti Bird Sanctuary. The decadal changes were also checked on the google imagery for the werlands as well as the reports for bird records on the internet portal.




**Map 2.1: Wetlands of Ariyalur District Assessed for Prioritization**

**Observations**

Of the three wetlands selected in the district, Sukran is the largest while Elandaikudam is the smallest of the three wetlands. Around the three wetlands, we recorded 84 plant species both aquatic and terrestrial including 16 invasive species (Table 2.1). The faunal components totaled 104 species with the representation of 50 bird species including the wetland birds. The field study revealed that Elandaikulam Lake was Eutrophic with high levels of phosphorus while the other two wetlands were Mesotrophic in status (Table 2.1). The water quality was comparatively better in Sukran Lake than the other two wetlands. The soil is regularly hydrated annually and hence it also forms a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, and recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Elandaikudam wetland. Mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Sukran Lake
2. Elandaikudam Lake
3. Venganur Lake

Table 2.1: Total number of flora and fauna documented form the wetlands of Ariyalur District

| S. No | Name of the Wetland | Plants (Invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes & Crustacean | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Elandaikudam Lake | 51 (13) | 7 | 10 | 7 | 2 | 10 | 0 | 2 | 25 | 5 |
| 2 | Venganur Lake | 33 (10) | 4 | 4 | 11 | 1 | 6 | 0 | 2 | 34 | 4 |
| 3 | Sukran Lake | 32 (3) | 0 | 3 | 6 | 0 | 6 | 1 | 0 | 10 | 4 |
| | **Total** | 84 (16) | 10 | 10 | 15 | 2 | 14 | 1 | 2 | 50 | 5 |

Table 2.2: The water and soil quality assessed form the wetlands of Ariyalur District

| **District Name** | Ariyalur | | |
|---|---|---|---|
| **Wetland Name** | Venganur Lake | Sukran Lake | Elandaikudam Lake |
| **Wetland Area (ha)** | 181 | 506 | 156 |
| **Buffer Area in Hectare (ha)** | 2587.22 | 3199.12 | 2542.91 |
| **Air Temperature °C** | 34.6 | 35.8 | 32 |
| **Water Temperature °C** | 30.2 | 33.6 | 31.3 |
| **Humidity %** | 50 | 40 | 55 |
| **Nutrients in Water** | Mesotrophic | Mesotrophic | Eutrophic |
| **Water pH** | 8.25 | 8.9 | 7.8 |
| **Water TDS ppm** | 262 | 207 | 530 |
| **Water Conductivity ppm** | 370 | 299 | 686 |
| **Light Penetration cms** | 55 | 15 | 20 |
| **Water Salinity ppt** | 0.176 | 0.145 | 0.389 |
| **DO mg/L** | 6.91 | 8.74 | 11.79 |
| **PO4P mg/L** | 0.010 | 0.007 | 0.113 |
| **Water Na ppm** | 1660 | 2664 | 86 |
| **Water K ppm** | 6 | 5.5 | 5.9 |
| **Water Li ppm** | 0.6 | 0.8 | 0.1 |
| **Water Ca ppm** | 90.9 | 46.2 | 50.3 |
| **Soil Colour code** | 10YR 4/3 | 10YR 4/4 | 10YR 6/3 |
| **Soil Colour** | Brown | Dark Yellowish Brown | Pale Brown |
| **Soil pH** | 7.72 | 7.81 | 7.73 |
| **Soil TDS ppm** | 116 | 108 | 254 |
| **Soil Conductivity ppm** | 162.7 | 152.7 | 357 |
| **Soil Salinity ppt** | 0.081 | 0.076 | 0.173 |
| **Soil Na ppm** | 9.6 | 16.9 | 27 |
| **Soil K ppm** | 2.3 | 2.4 | 3.5 |
| **Soil Li ppm** | 0.1 | 0 | 0.1 |
| **Soil Ca ppm** | 14.9 | 8.5 | 24.4 |

## Elandaikudam Lake

**Lake Survey Number:** 1/1, ½., 304, 315, 101, 300, 302

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Elandaikudam Lake and Kandarathitham Lake, (Plate 1).
1.2 Villages that surround the wetland include Elandaikudam, Kandarathitham, Vaidhiyanathapuram, Baikanathapuram and Kanamettutheru.
1.3 & 1.4 The Lake is based in Ariyalur district of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 10° 55.33.3" N; 10° 54'47.0" N; 10° 54'30.7" N; 10° 55'38.7" N; and Longitude: 079° 02'15.9" E; 079° 02'14.7" E; 079° 02'12.7" E; 079° 02'14.0" E;
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 156 hectares (Map 2.2).
2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.
2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.
2.4 The elevation of the wetland is 48 to 62 meters (asl).
2.5 Water regimes
a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area. and Metur Dam Canal. The Nandiyar Canal system has indirect influence.
b) The water in the wetland is intermitant in nature.
c) The water form the wetlands helps in replenishing the groundwater and the overflow joins the adjoining village tanks and agriculture fields.
d) The pH of the water was 7.8.
e) The salinity of the lake was 0.39 ppt.
f) The wetland had *Ipomoea, Prosopis juliflora, Eichornea crassipes* and other weeds that dominated the landscape i.e 80%.
2.6 Climatic setting
a) Rainfall for the month of February 2018 in Ariyalur was 0.0 mm.
b) The atmospheric temperature varied between 30°C and 32°C and the humidity was 51 to 55 %
2.7 The area of zone of influence is 2542.91 hectares with a fixed buffer area of 2 kms around the wetland (Map 2.3).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 80%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0%. |

2.9. The comparison of the wetlands for the years 2009 and 2017 is given in Map 2.2& 2.3.

**Section III- Biodiversity**

3.1 List of Plant species: 51 species of plants were recorded around the wetland during our visit (Table 2.3).
3.2 List of animal species: 68 animal species including 4 domestic species were recorded during the survey (Table 2.4a-h).
3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 2.4a-h) where as one threatened and one vulnerable species of fish were recorded.
3.4 Major invasive alien plant species and extent of invasion: 12 species of invasive plants were observed with *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.* forming nearly the major vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species like *Tilapia sp* and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture. The Panchayat Union provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the agricultural lands and village tanks.
4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the village panchayat, the fish species are local endemic ones.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose. The borassus plant sap is also collected for local consumption and sale in the local market.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has a major temple along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is used majorly by the locals for dumping garbage, release of sewage and use as toilet.
4.12 There are agriculture and plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken on a minor scale.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetlands
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character are changing rapidly due to lack of conservation measures.
6.4 There is mining for sand or silt undertaken on a minor scale.

**Section VII Notification Category**

The wetland is not is not a protected area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly agriculture practices and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The agriculture within the wetland should be taken care of and it should be seen that the agricultural activities do not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Elandaikudam Lake**

There is no published literature available for Elandaikudam Lake

Table 2.3: List of Plant species recorded along the Elandaikudam Lake

| S. No | Scientific Name | English Common Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN status |
|---|---|---|---|---|---|---|
| 1 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 2 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 3 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 4 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 5 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 6 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 7 | *Lannea coromandelica* | Indian Ash Tree | Oti | Anacardiaceae | Native | NA |
| 8 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 9 | *Bauhinia purpurea* | Purple orchid tree | Nilattiruvatti | Fabaceae | Native | LC |
| 10 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 11 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 12 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 15 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 16 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 17 | *Terminalia catappa* | Indian Almond | Nattuvadumai, Vadumai | Combretaceae | Native | NA |
| 18 | *Turnera subulata* | White Alder | | Turneraceae | Invasive | NA |
| 19 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 20 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 21 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 22 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 23 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 24 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 25 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 26 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 27 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 28 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 29 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 30 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 31 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 32 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 33 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 34 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 35 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 36 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 37 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 38 | *Amaranthus blitum* | Purple Amaranth | Arumaatha Thandu | Amaranthaceae | Native | NA |
| 39 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 40 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 41 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 42 | *Musa paradisiaca* | Banana Plant | Vaazhaimaram | Musaceae | Native | NA |
| 43 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 44 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 45 | *Cyperus corymbosus* | Peri peri | | Cyperaceae | Native | NA |
| 46 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 47 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 48 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 49 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 50 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 51 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

LC- Least Concern, NA - Not Assessed,

Table 2.4a**:**List of Insects recorded along the Elandaikudam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Grasshopper species | *Spathosternum prasiniferum* | Acrididae |
| 3 | Mantis Egg (Ootheca) | | Mantodae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 2.4b**:**List of Butterflies recorded along the Elandaikudam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 2 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 3 | Dark Grass Blue | *Zizeeria karsandra* | Polyommatinae | Common |
| 4 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 5 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Joker | *Byblia ilithyia* | Biblidinae | Common |

Table 2.4c: List of Dragonflies recorded along the Elandaikudam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Brown Spreadwing | *Lestesumbrinus* | Lestidae | Uncommon |
| 2 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 3 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 4 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 5 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 6 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 7 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 8 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 9 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 10 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 2.4d: List of Arachnida recorded along the Elandaikudam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 2.4e: List of Fish recorded form the Elandaikudam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 2.4f: List of Reptiles recorded along the Elandaikudam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

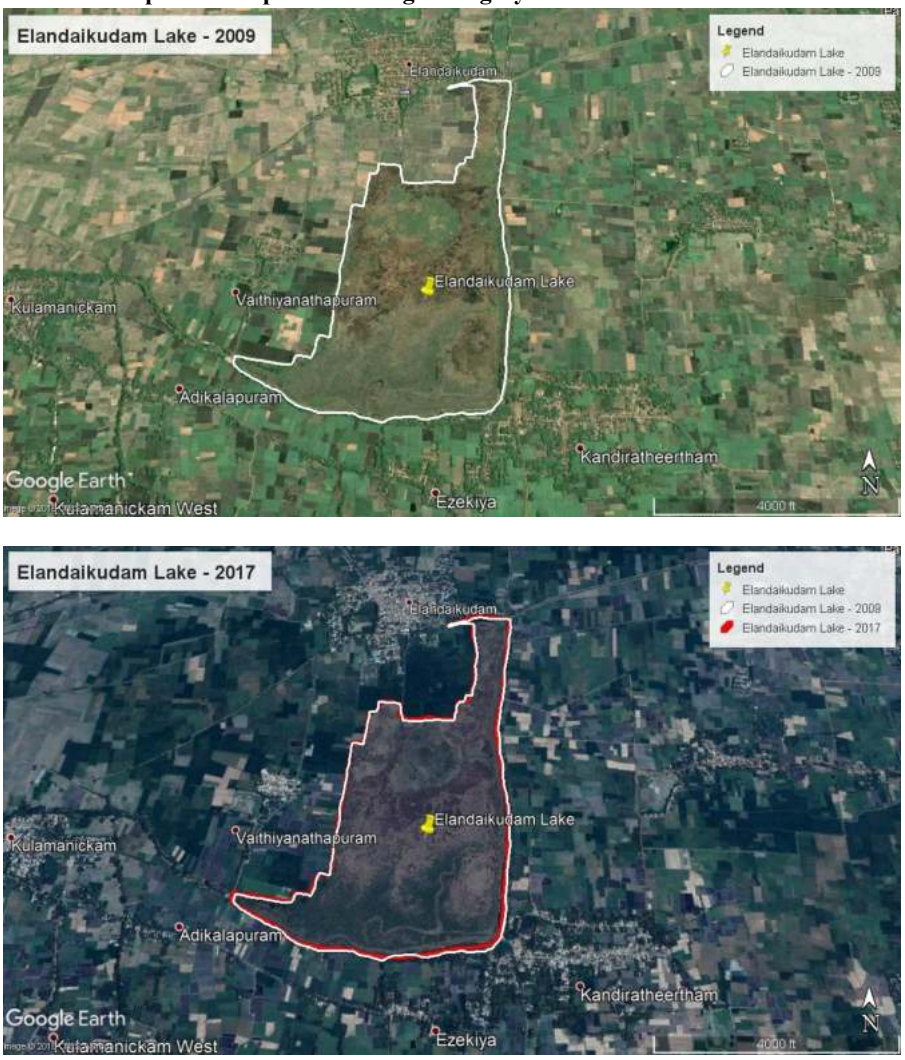
Table 2.4g: List of Birds recorded along the Elandaikudam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 4 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 5 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 6 | Black-winged Kite | *Elanus caeruleus* | Accipitridae | Least Concern |
| 7 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 8 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 9 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 10 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 11 | Blue-faced Malkoha | *Rhopodytes viridirostris* | Cuculidae | Least Concern |
| 12 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 13 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 14 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 15 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 16 | Indian Golden Oriole | *Oriolus kundoo* | Oriolidae | Least Concern |
| 17 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 18 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 19 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 20 | White-browed Bulbul | *Pycnonotus luteolus* | Pycnonotidae | Least Concern |
| 21 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 22 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 23 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 24 | Chestnut-shouldered petronia | *Gymnoris xanthocollis* | Passeridae | Least Concern |
| 25 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

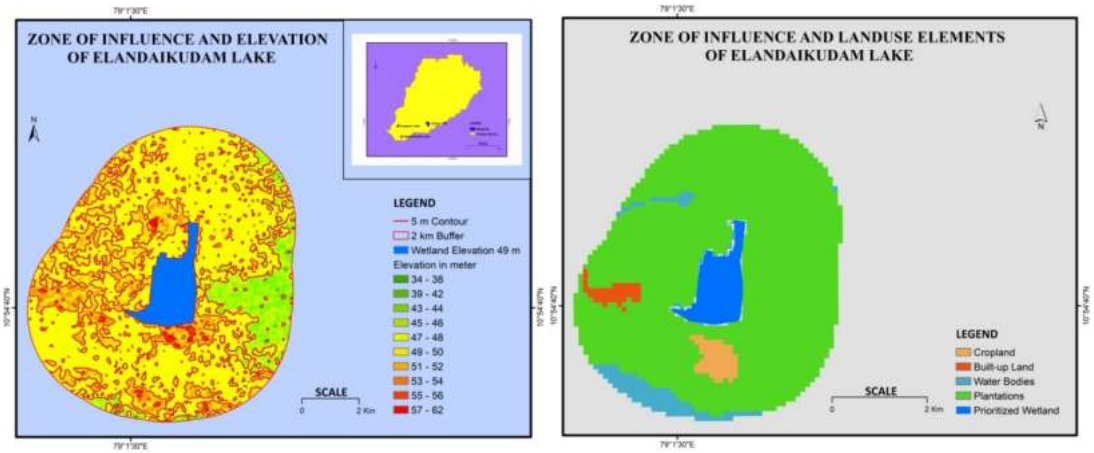
Table 2.4h: List of Mammals recorded along the Elandaikudam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Pig | *Sus domesticus* | Suidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Common |

**Map 2.2: Comparative Google imagery for Elandaikudam Lake**




**Map 2.3: The zone of influence around the Elandaikudam Lake.**



**Sukran Lake**

**Lake Survey Number:** 1, 2(1A)

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Sukrandri lake also called as Kamarasavalli eri, (Plate 1).

1.2 Villages that surround the wetland include Buthur, Nanaganur, kamarasavalli, Mattur and Vandarakattalai.

1.3 & 1.4 The lake is based in Ariyalur taluka in Ariyalur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 00.08.7" N; 11° 00'18.4" N; 11° 00'08.9 N; and Longitude: 079° 10'38.9" E; 079° 10'44.2" E; 079° 10'42.6" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 506 hectares (Map 2.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 43 to 45 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area, Karevati Bird Sanctuary and Cauvery River.

b) The water in the wetland is intermitant in nature.

c) The water form the wetlands helps in replenishing the groundwater and the overflow joins the adjoining Cauvery, village tanks and agriculture fields.

d) The pH of the water was 8.9.

e) The salinity of the lake was 0.145 ppt.

f) The wetland had *Ipomoea, Prosopis Juliflora, Typha sp.* and other weeds dominate the landscape i.e 80%.

2.6 Climatic setting

a) Rainfall for the month of February, 2018 in Ariyalur was 0.0 mm.

b) The atmospheric temperature was 35.8°C and the humidity was 43%

2.7 The area of zone of influence is 3199.12 hectares with a fixed buffer area of 2 kms around the wetland (Map 2.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 80%; | Settlements (rural) 20% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2009 & 2018 is given in Map 2.4& 2.5.

**Section III- Biodiversity**

3.1 List of Plant species: 32 species of plants were recorded around the wetland during our visit (Table 2.5).

3.2 List of animal species: 30 animal species including 3 domestic species were recorded during the survey (Table 2.6 a-f).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 2.6 a-f).

3.4 Major Plant invasive alien species and extent of invasion: Three invasive plant species including *Prosopis juliflora* and *Ipomoea sp.* formed a major percentage of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Invasive species like *Tilapia sp* and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture. The Panchayat Union provides drinking water form the Cauvery and borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The overflow water feeds the adjoining wetlands, agricultural lands and village tanks.

4.3 Fishery is undertaken for recreational purpose, the fish species are local endemic ones.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding area.

4.10 The wetland has a major temple along its vicinity and major cultural and religious activities are performed in the wetland.

4.11 The site adjoining the wetland is used majorly used by the locals for dumping garbage, release of sewage and use as toilet.

4.12 There are agriculture and plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded a few bird species during our survey.

4.14 The wetland does support local fish species.

4.15 There is mining for sand or silt undertaken on a major scale.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure.

6.3 The wetland water quality and the ecological character are changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a protected area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly agriculture practices and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Nothing was observed in the present situation.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Sukran eri.

Table 2.5: List of plant species recorded along the Sukran Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN status |
|---|---|---|---|---|---|---|
| 1 | *Annona squamosa* | Custard Apple | Sithapazham | Annonaceae | Exotic | NA |
| 2 | *Capparis grandis* | Tree Caper, Grand Caper | Thotti maram | Capparaceae | Native | NA |
| 3 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 4 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 5 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 6 | *Bauhinia purpurea* | Purple orchid tree | Nilattiruvatti | Fabaceae | Native | LC |
| 7 | *Caesalpinia pulcherrima* | Peacock Flower, Pride of Barbados, Dwarf poinciana | Mayurkonrai | Fabaceae | Native | |
| 8 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 9 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 10 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 11 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 12 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 13 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 14 | *Basella alba* | Malabar Spinach | Kodi pasalai, | Basellaceae | Native | NA |
| 15 | *Glinus lotoides* | Lotus Sweetjuice, | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 16 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 17 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 18 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 19 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 20 | *Justicia adhatoda* | Malabar Nut, White vasa, | Acalai, Atatotai, | Acanthaceae | Native | |
| 21 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 22 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 23 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 24 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 25 | *Euphorbia umbellata* | African milk bush | | Euphorbiaceae | Native | NA |
| 26 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 27 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 28 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 29 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kotti kizhangu | Aponogetonaceae | Native | LC |
| 30 | *Bambusa bambos* | Indian Thorny Bamboo | Kulay-munkil, | Poaceae | Native | NA |
| 31 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 32 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 2.6a: List of Butterflies recorded along the Sukran Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 4 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 6 | Joker | *Byblia ilithyia* | Biblidinae | Common |

Table 2.6b: List of Odonata recorded along the Sukran Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 2.6c: List of Fishes recorded form the Sukran Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | IUCN Status |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 4 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 5 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 6 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 2.6d: List of Amphibian recorded form the Sukran Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

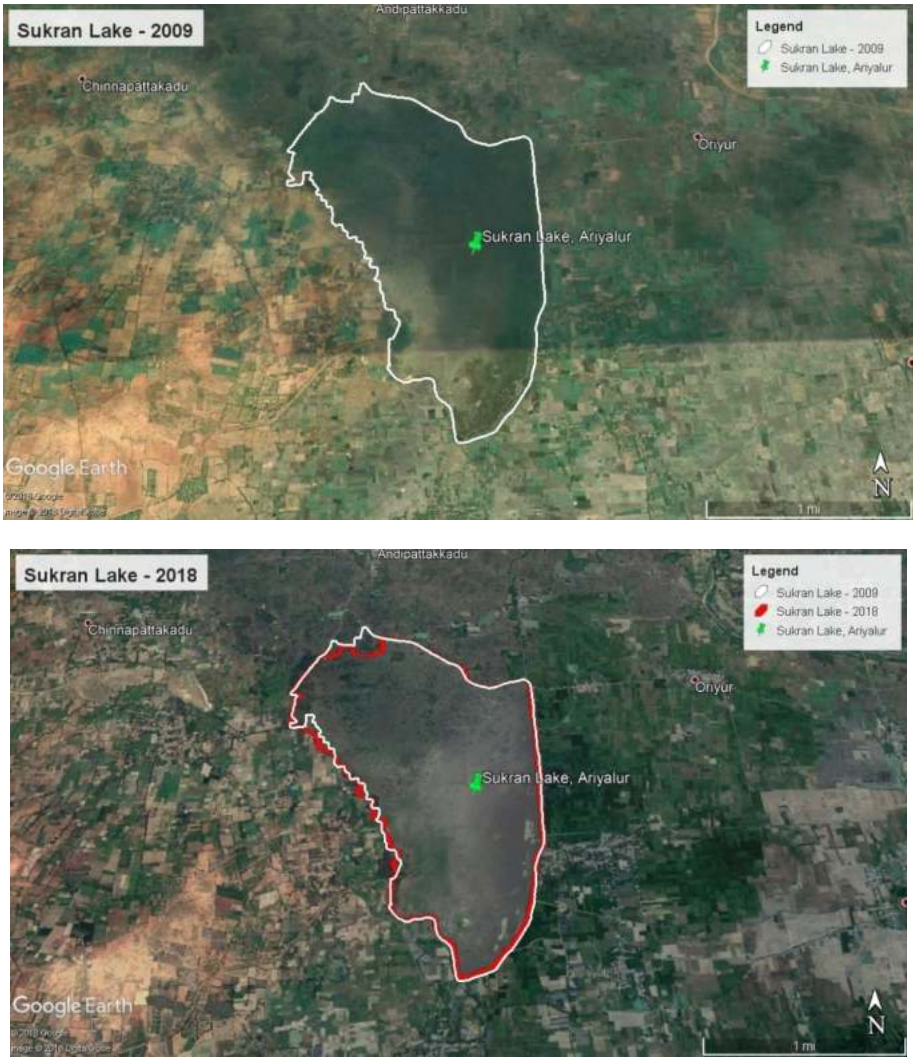
Table 2.6e: List of Birds recorded along the Sukran Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 3 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 4 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 5 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 6 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 7 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 8 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 9 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 10 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |

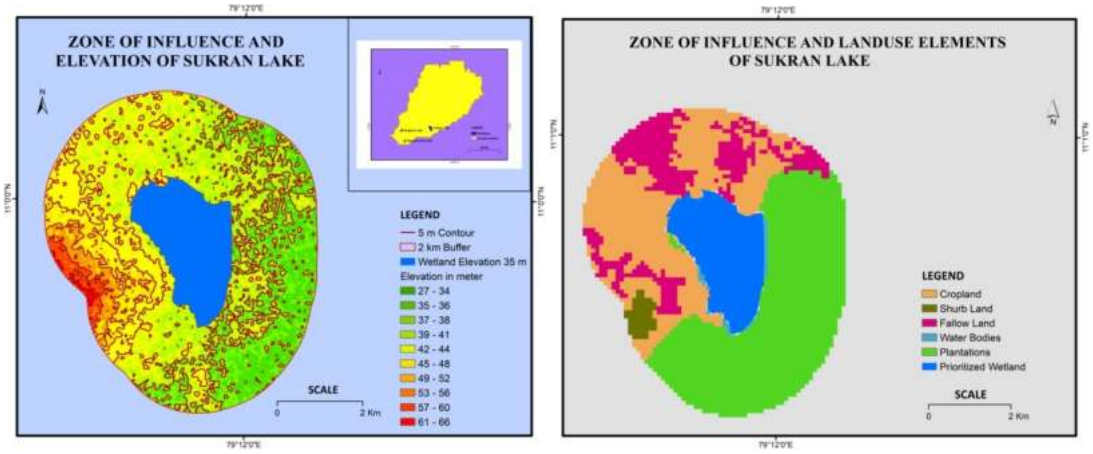
Table 2.6f: List of Mammals recorded along the Sukran Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 2.4: Comparative Google imagery for Sukran Lake**




**Map 2.5: The zone of influence around the Sukran lake.**



**Venganur Lake**

**Lake Survey Number:** 5 to 13, 21 to 30, 155, 156

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as Venganur lake also called as Andivodai Eri (Plate 2).
1.2 Villages that surround the wetland include Burathakudi and Venganur.
1.3 & 1.4 The Lake is based in Ariyalur taluka in Ariyalur district of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 10° 58.22.2" N; 10° 58'20.4" N; 10° 58'31.8" N; 10° 58'18.6" N; 10° 58'33.3" N; and Longitude: 079° 00'06.0" E; 079° 08'49.7" E; 079° 01'10.4" E; 079° 01'09.4" E; 079° 00'54.09" E;
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 181 hectares (Map 2.6).
2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.
2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.
2.4 The elevation of the wetland is 60 to 66 meters (asl)
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and Cauvery River.
   b) The water in the wetland is intermitant in nature.
   c) The water form the wetlands helps in replenishing the groundwater and the overflow joins the adjoining Karevati Bird Sanctuary, village tanks and agriculture fields.
   d) The pH of the water was 8.24 to 8.3.
   e) The salinity of the lake was 0.176 ppt.
   f) The wetland had *Ipomoea sp, Prosopis juliflora* and other weeds that dominated the landscape i.e 80%.
2.6 Climatic setting
   a) Rainfall for the month of February, 2018 in Ariyalur was 0.0 mm.
   b) The atmospheric temperature varied between 33°C and 34.6 °C and the humidity was 45% to 52%.
2.7 The area of zone of influence is 2587.23 hectares with a fixed buffer area of 2 kms around the wetland (Map 2.7).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 90%; | Settlements (rural) 10% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2009 & 2018 is given in Map 2.6 & 2.7.

**Section III- Biodiversity**

3.1 List of Plant species: 33 species of plants were recorded around the wetland during our visit (Table 2.7).
3.2 List of animal species: 67 animal species including 3 domestic species were recorded during the survey (Table 2.8 a-h)
3.3 Species of Conservation importance: Three Near Threatened species of birds were observed during the survey (Table 2.8 a-h) in addition to one threatened and one Vulnerable fish species.
3.4 Major Plant invasive alien species and extent of invasion: Ten Invasive species of plants including *Prosopis juliflora*, *Accacia indica*, *Parthenium hysterophorus* and *Ipomoea sp.*formed nearly major proportion of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Invasive species *Tilapia sp* and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture. The Panchayat Union provides drinking water form the Cauvery and borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the adjoining wetlands, agricultural lands and village tanks.
4.3 Fishery is undertaken for recreation purpose. The commercial fishery is under the contract of the village panchayat, the fish species are local endemic ones.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage, release of sewage and used as toilet.
4.12 There are agriculture and plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken on a minor scale.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a protected area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly agriculture practices and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Nothing was observed in the present situation

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published Literature available for Venganur Lake

Table 2.7: List of Plant species recorded along the Venganur Lake

| S. No | Scientific Name | Common Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 2 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 3 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 4 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 5 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 6 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 7 | *Sesbania sesban* | Common Sesban, Egyptian Rattlepod | | Fabaceae | Native | NA |
| 8 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 9 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 10 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 11 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 12 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 13 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 14 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 15 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 16 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 17 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 18 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 19 | *Justicia tranquebariensis* | Tarangambadi Justicia | Punnaku Poodu, Mutaliyar, Narimurunkai, Niyakkiyam | Acanthaceae | Native | |
| 20 | *Bonnaya ciliata subsp. ciliata* | Fringed linternia | | Linderniaceae | Native | LC |
| 21 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 22 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 23 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 24 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 25 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 26 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 27 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 28 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 29 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 30 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 31 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 32 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 33 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 2.8a: List of Insects recorded along the Venganur Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 2 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 2.8b:List of Butterflies recorded along the Venganaur lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 5 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 8 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 2.8c:List of Odonates recorded along the Venganaur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 2.8d:List of Arachnida recorded along the Venganur Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 2.8e: List of Fish recorded form the Venganaur Lake.

| S. No | *Scientific Name* | Common English Name | Local Tamil Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 4 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 5 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 6 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 7 | *Oreochromis mossambicus* | Tilapia sp | Nei meen, Jilapi, Kari meen | Cichlidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 2.8f: List of Reptiles recorded along the Venganaur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 2.8g: List of birds recorded along the Venganur Lake

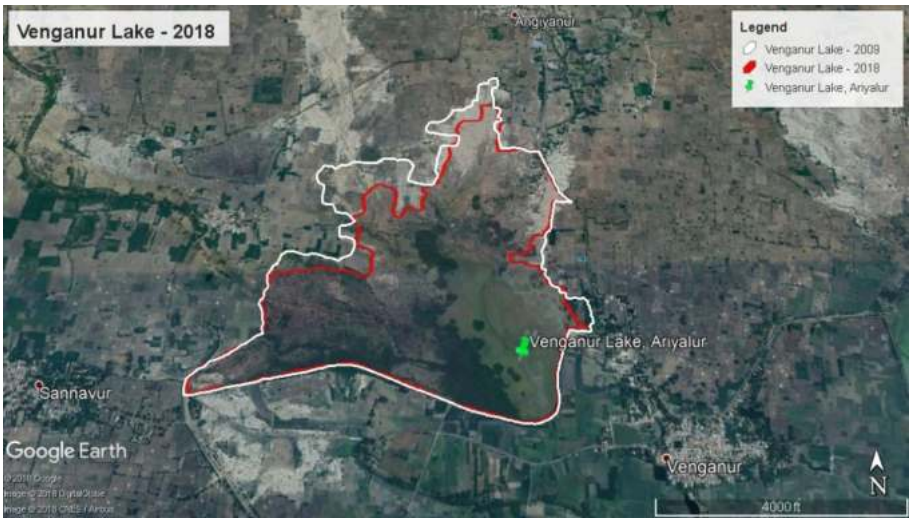
| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 3 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 4 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 5 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 6 | White Stork | *Ciconia ciconia* | Ciconiidae | Least Concern |
| 7 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 8 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 9 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 10 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 11 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 12 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 13 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 14 | Booted Eagle | *Hieraaetus pennatus* | Accipitridae | Least Concern |
| 15 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 16 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 17 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 18 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 19 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 20 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 21 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 22 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 23 | Common Hoopoe | *Upupa epops* | Upupidae | Least Concern |
| 24 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 25 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 26 | Common Woodshrike | *Tephrodornis pondicerianus* | Tephrodornithidae | Least Concern |
| 27 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 28 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 29 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 30 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 31 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 32 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 33 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 34 | Baya Weaver | *Ploceus philippinus* | Ploceidae | Least Concern |

Table 2.8h: List of Mammals recorded along the Venganaur Lake

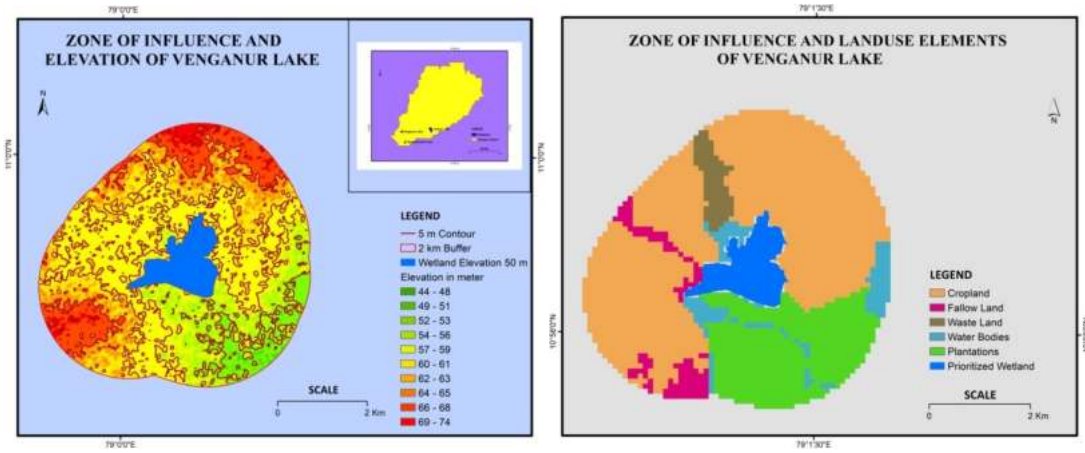
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 2.6: Comparative Google imagery for Venganur Lake**




**Map 2.7: The zone of influence around the Venganur lake.**



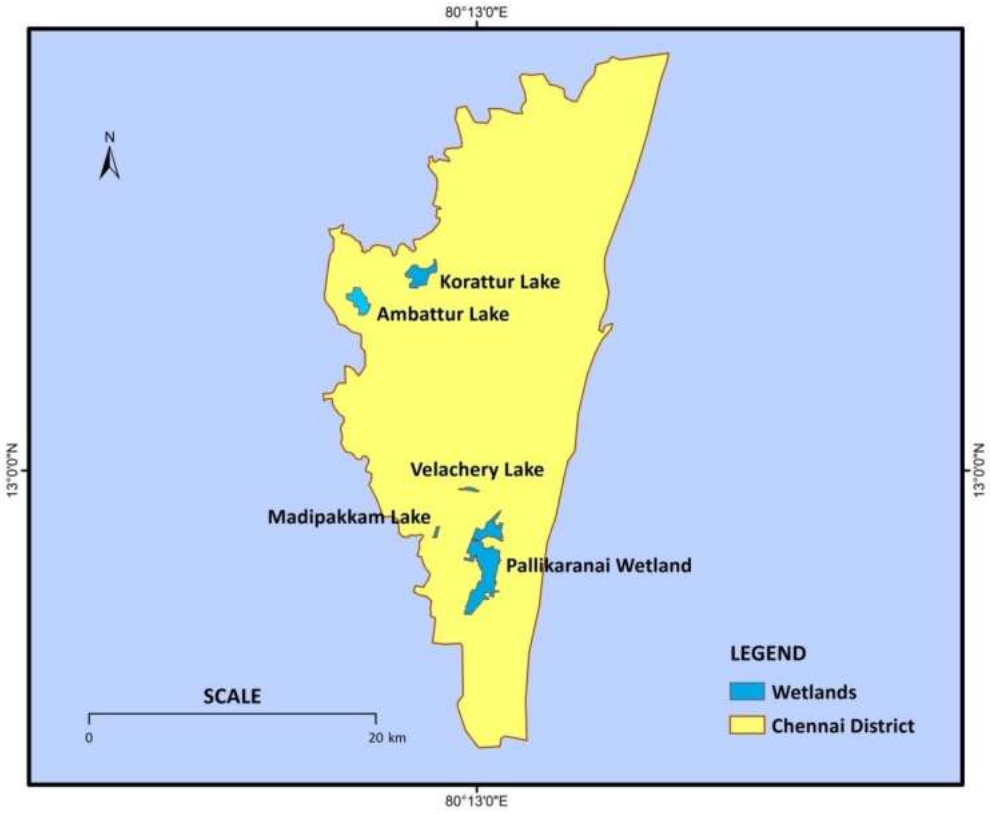
## 3: Chennai District

### 1. Introduction

Chennai, the capital of Tamil Nadu, is an important coastal city of India having a major port and many industries. Chennai, besides being the capital city of Tamil Nadu is also an important district of the state. The district city is one of the four metropolises of India, playing significant role in the historical, cultural and intellectual development of the nation. The district is located on the north-east end of Tamil Nadu on the coast of Bay of Bengal. Surrounded by the Bay of Bengal in the east and the remaining three sides by Chengalpattu and Thiruvallur Districts, Chennai has an even topography of land with slight rising form the sea level.

Total geographic area of Chennai as per SAC (2011) is 178.20 km². Total area under wetland is 917 ha, which includes 15 small wetland (<2.25 ha). Major wetland types of the district are Sand/beach, Creeks, River/stream and Lakes/ponds. Lakes/Ponds occupy 8.62% of wetland area. There are 5 Tanks/Ponds with 76 ha area (8.29%).

The wetlands were selected for the present study based on its size and proximity to the city and its ecosystem services. Initially only Velachery and Madipakkam were selected for Chennai, however with the remapping of the district Pallikarani, Korattur and Ambattur were also added to the city. Pallakarani wetland is a protected area while the other four are selected on the basis of available literature, decadal changes in the Google imagery and the information available on the internet portal.




**Map 3.1: Wetlands of Chennai district assessed for Prioritization**

### Observations

Of the five wetlands selected in the district, Pallikaranai is the largest while Madipakkam is the smallest. Around the five wetlands, we recorded 99 plant species both aquatic and terrestrial including 15 invasive species (Table 3.1). The faunal components totaled 125 species with the representation of 54 bird species of including

the wetland birds. The field study revealed that Pallikaranai wetland was Eutrophic with high levels of phosphorus while Ambatur and Velachery wetlands were Mesotrophic while the other two were oligotrophic in status (Table 3.2). The high values of phosphorus in Velachery lake can be attributed to the small size of the wetland and excess release form the surrounding settlements. The soil was obtained form only three wetlands as it was not easily accessible at Pallikaranai and Velachery wetlands. However since the wetlands have water almost throughout the year these perform a number of wetlands functions apart form being a sink for the excess pollutants.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat and recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were mainly the encroachment by human settlement around the wetlands in addition to the release of sewage, solid and hazardous waste that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Pallikaranai Wetland, Velachery Lake and Madippakkam Lake
2. Ambattur Lake and Korattur Lake

Table 3.1: The flora and fauna recorded form the wetlands of Chennai District

| S. No | Name of the Wetland | Plants (invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Velacherry Lake | 36 (11) | 1 | 5 | 8 | 0 | 12 | 0 | 3 | 8 | 4 |
| 2 | Madippakkam Lake | 31 (6) | 8 | 4 | 2 | 0 | 4 | 0 | 2 | 13 | 7 |
| 3 | Pallikarnai Wetland | 20 (8) | 5 | 7 | 18 | 1 | 13 | 0 | 2 | 43 | 4 |
| 4 | Korattur Lake | 56 (9) | 6 | 8 | 16 | 1 | 13 | 0 | 3 | 35 | 5 |
| 5 | Ambattur Lake | 37 (7) | 4 | 7 | 2 | 0 | 4 | 0 | 1 | 16 | 4 |
| | Total | 99 (15) | 12 | 10 | 22 | 1 | 16 | 0 | 3 | 54 | 7 |

Table 3.2: The water and soil quality assessed form the wetlands of Chennai District

| District Name | Chennai | | | | |
|---|---|---|---|---|---|
| Wetland Name | Madippakkam Lake | Korattur | Ambattur Lake | Velachery Lake | Pallikaranai Wetland |
| Wetland area (ha) | 17.5 | 213 | 168 | 21.5 | 834 |
| Buffer Area in Hectare (ha) | 1701.62 | 2682 | 2415.2 | 1883.95 | 5086.98 |
| Air Temperature °C | 32 | 25.5 | 29.7 | 29.1 | 28.5 |
| Water Temperature °C | 33 | 25.3 | 31.2 | 28.2 | 28 |
| Humidity % | 45 | 74 | 62 | 54 | 55 |
| Nutrients in Water | Oligotrophic | Oligotrophic | Mesotrophic | Mesotrophic | Eutrophic |
| Water pH | 9.6 | 7.8 | 8.5 | 8.5 | 9 |
| Water TDS ppm | 567 | 645 | 1410 | 154 | 342 |
| Water Conductivity ppm | 801 | 537 | 1991 | 355 | 435 |
| Light Penetration cms | 29 | 40 | 80 | 10 | 5 |
| Water Salinity ppt | 0.393 | 0.604 | 1.3 | 0.532 | 1.824 |
| DO mg/L | 1.22 | 3.66 | 0.81 | 1.83 | 3.46 |
| PO4P mg/L | 0.010 | 0.083 | 0.044 | 0.526 | 0.178 |
| Water Na ppm | 499 | 151.9 | 668 | 97.25 | 202 |
| Water K ppm | 11.9 | 12.75 | 14.5 | 44.6 | 275 |
| Water Li ppm | 0.3 | 0.3 | 0.5 | 0.45 | 1.2 |
| Water Ca ppm | 90.1 | 56.85 | 105.4 | 53.8 | 141 |
| Soil Colour code | 7.5YR 4/3 | 7.5YR 5/4 | 7.5YR 4/2 | | |
| Soil Colour | Brown | Brown | Brown | soil was not accessible | soil was not accessible |
| Soil pH | 7.82 | 7.28 | 3.29 | | |
| Soil TDS ppm | 1.22 | 173 | 939 | | |
| Soil Conductivity ppm | 1715 | 240 | 1345 | | |
| Soil Salinity ppt | 0.863 | 0.117 | 0.657 | | |
| Soil Na ppm | 55.8 | 13.4 | 27.1 | | |
| Soil K ppm | 30.7 | 5 | 4.7 | | |
| Soil Li ppm | 0.4 | 0.1 | 0.8 | | |
| Soil Ca ppm | 86.6 | 17.7 | 68.2 | | |

**Ambattur Lake**

**Lake survey Number**: 552

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Ambattur Lake (Plate 3)

1.2 Villages that surround the wetland include MGR Puram east and MGR puram west, KK Nagar, Anna Nagar, Ambuttur Housing board and city premises.

1.3 & 1.4 The Lake is based in Ambattur taluka in Chennai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 05'52.0" N; 13° 05'51.8" N; 13° 05'51.6" N; and Longitude: 080° 08'32.5" E; 080° 08'35.7" E; 080° 08'40.6" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 168 hectares (Map 3.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category permanent lake.

2.3 Based on the secondary information the average depth is 2.5 to 4 meters for the wetland.

2.4 The elevation of the wetland is 21 to 25 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and Ayyapakkam eri.
b) The water in the wetland is mostly of permanent nature.
c) The water also helps in replenishing the groundwater and the overflow goes to Koratur eri and then to Bay of Bengal.
d) The pH of the water was observed to be alkaline and recorded up to 8.5.
e) The lake has fresh water with the salinity recorded at 1.30 ppt at the time of sampling.
f) The wetland was observed to be Mesotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of August in Chennai was 6 mm.
b) The atmospheric temperature was 29.7 °C and the humidity was 62%

2.7 The area of zone of influence is 2415.2 hectares with a fixed buffer area of 2 kms around the wetland (Map 3.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 05%; | Grasslands / Scrub lands 0%; |
| Agriculture 0%; | Settlements (rural) 10%; |
| Settlements (urban) 70%; | Industrial 20% |

2.9. The comparison of the wetland for the years 2007 and 2017 is given in Map 3.3 & 3.4.

**Section III- Biodiversity**

3.1 List of Plant species: 33 species of plants were recorded around the wetland during our visit (Table 3.3).

3.2 List of animal species: 38 faunal species including 4 domestic species were recorded during the survey (Table 3.4 a-g)

3.3 Species of Conservation importance: One Near Threatened species of birds were observed during the survey (Table 3.4 a-g)

3.4 Major Plant invasive alien species and extent of invasion: Seven Invasive plants including *Parthenium hysterophorus*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is not undertaken around the wetland and the lake water is not used for irrigation.
4.3 Fishery is undertaken on a commercial and recreational level in the wetland, as fishing tenders are issued only recently by PWD.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is a site for local recreation and is not frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiasts visit the wetland during the birding season.
4.12 There are no agriculture or plantation activities within the wetland
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports fishery for commercial purpose.
4.15 There was no mining for sand or silt undertaken.
4.16 Industries are present that also release their waste into the wetland.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity and some recreational fishery is undertaken without any lease form government or community until recently.
5.2 Major portion of the water is utilized for irrigation
5.3 Agriculture is undertaken around the wetland and not within the wetland.
5.4 Grazing by the cattle was not observed.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by live stock and also for fishing.

**Section VI Present and potential threats**

6.1 The wetland does show major change in the pattern of water inflow and outflow as there is excess of sewage and effluents that is released into the wetland.
6.2 There is excess pollution in the form of sewage, effluents and solidwaste dumping is seen.
6.3 There are no agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.
6.5 The wetland does have idol immersion but solid waste dumping and encroachment activities are observed.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by city and has the pressure of pollution and solid waste.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Sewage and effluent release has to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Ambattur lake


Anantha Narayana S., Shinto Kuriyan, Subhasri A. and Jayasri A. (2016) Cost Effective Method to Reduce Turbidity and pH level of Korattur Lake water situated in Chennai Metropolitan city. *International Journal of Scientific & Engineering Research*, 7(12), 229-235. ISSN 2229-5518.

Jayakumar M. and Malarvannan S. (2013) Remote Sensing and GIS Application in Wetland Change Analysis: A Case Study of Ambattur Lake. *Journal of Research, Extension and Development* . 1(11), 129-134.

Kather Bee S., Chitra J. and Malini E. (2015) Studies on Plankton Diversity and Water Quality of Ambattur Lake, Tamil Nadu.*International Journal of Pure and Applied Zoology.* 3(1), 31-36. ISSN (Print) : 2320-9577.

Kistan A., Kanchana V. and Thaminum Ansari A. (2013) Analysis of Ambattur Lake Water Quality with Reference to Physico – Chemical aspects at Chennai, Tamil Nadu. *International Journal of Science and Research* (IJSR). 4(5), 944-947.

Nandhakumar S., Varun K. and Sathyanarayanan N. (2015) Interpretation of groundwater quality around Ambattur Lake, Chennai, Tamil Nadu.*Journal of Chemical and Pharmaceutical Research*, 7(4), 1626-1633 ISSN : 0975-7384.

Priyanga G., Abhirami B. and Gowri N R. (2015) Phyto-remediation of urban lakes in and around Chennai. *Journal of Chemical and Pharmaceutical Sciences*. 8(2), 288-291. ISSN: 0974-2115.

Saubhagya Ranjan Mahapatra. (2017) Geochemical Evaluation of North Chennai City Lakes: Impact of Rapid Urbanization. (Ph. D Thesis) Department of Applied Geology School of Earth and Atmospheric Sciences, University Of Madras.

Sekar Thangavel, Udayakumar Muthulingam, Dhatchanamoorthy Narayanasamy and Ajithadoss Kanakashanthi (2010) A Floristic Study in a Perennial Lake of Thiruvallur District, South India. 1-11. (webmedcentral.com -article_view/1037)

Susheela S. and Yogananth S. (2016) A Critical Study on Chennai Flood. *International Journal of Advance Research and Innovative Ideas in Education*. 1(3), 49-52.


Table 3.3: List of plant species recorded along the Ambattur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Status |
|---|---|---|---|---|---|---|
| 1 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 4 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 5 | *Muntingia calabura* | Jamaica Cherry | Thenpazham | Muntingiaceae | Exotic | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 8 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 9 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 10 | *Senna tora* | Stinking Cassia, Chinese senna, Foetid cassia,Java bean, Low senna,Peanut weed, Sickle senna, Sicklepod | Senavu | Fabaceae | Native | NA |
| 11 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 12 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 13 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 14 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 15 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 16 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 17 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 18 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 20 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 21 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 22 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 23 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 24 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 25 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 26 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 27 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 28 | *Breynia vitis-idaea* | Mountain Coffee Bush | | Phyllanthaceae | Native | NA |
| 29 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhandlli | Phyllanthaceae | Native | NA |
| 30 | *Phyllanthus reticulatus* | Black-Honey Shrub | Sivappuppula, Kattukkilandlli | Phyllanthaceae | Native | NA |
| 31 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 32 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 33 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 3.4a: List of Insect species recorded along the Ambattur Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 3.4b: List of Butterfly species recorded along the Ambattur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 2 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 3.4c: List of Odonata species recorded along the Ambattur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Trumpet Tail | *Acisoma panorpoides* | Libellulidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 23.4d: List of Fish species recorded form the Ambattur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 3.4e: List of Reptile species recorded along the Ambattur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 3.4f: List of Bird species recorded along the Ambattur Lake

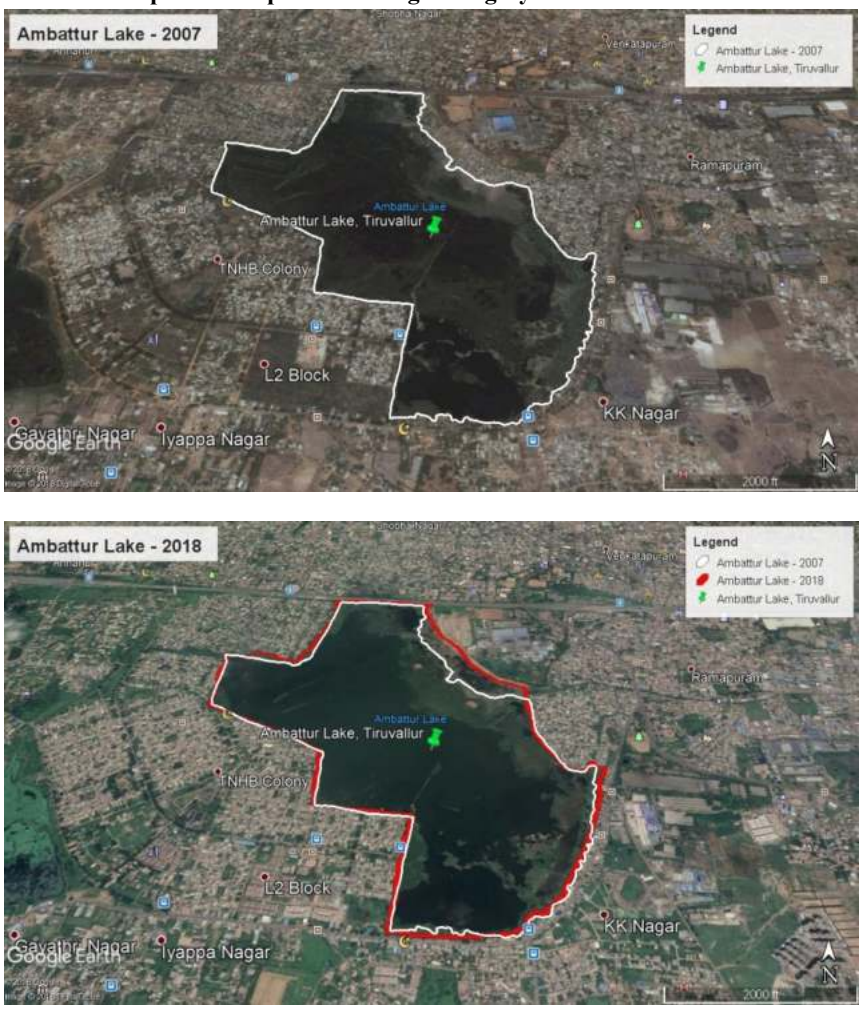
| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Cotton Pygmy-goose | *Nettapus coromandelianus* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Striated Heron | *Butorides striata* | Ardeidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 6 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 11 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 12 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 13 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 14 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 15 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 16 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

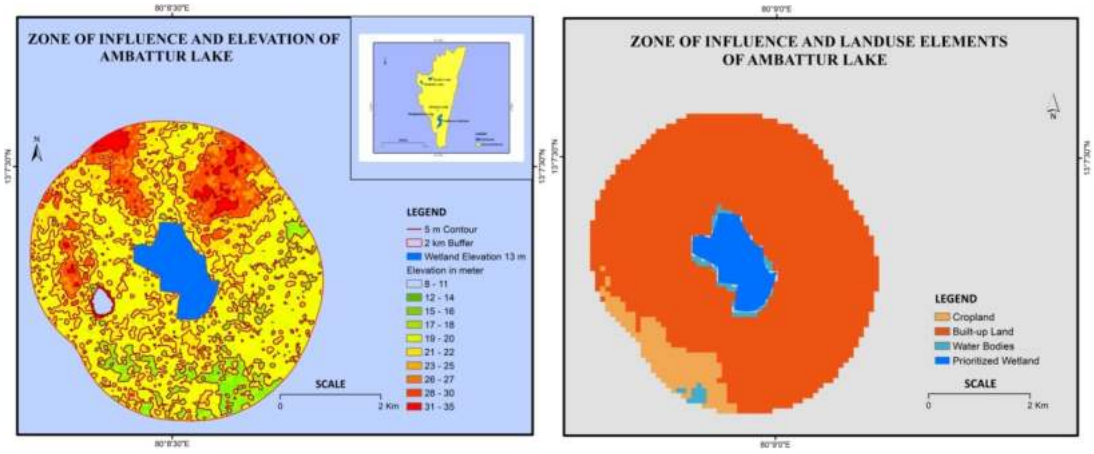
Table 3.4g: List of Mammal species recorded along the Ambattur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |

**Map 3.2: Comparative Google imagery for Ambattur Lake**




**Map 3.3: The zone of influence around the Ambattur Lake.**



**KoratturLake**

Korattur Lake in Korattur, Chennai, Tamil Nadu, is one of the largest lakes in the western part of the city. Korattur lake is a chain of three lakes comprising of Ambattur lake, Madhavaram lake and Korattur lake, spread over 990 acres (13°07'19.2"N 80°11'04.4"E). It is located to the north of the Chennai-Arakkonam railway line.
Cooum River is one of the main Rivers flowing through the middle part of Chennai with a catchment area of 682 sq.km. At present, it carries only drainage water that is highly polluted. It originates form the surplus flow of the Cooum tank in Thiruvallur taluk and also form the tanks en route which discharge their surplus water into the River during flood season. The Korattur anicut at Zamin Korattur diverts flows form this River in to the Chembarambakkam Tank. The flow of Cooum River at Korattur is 40.2 Mm3 for an average duration of 31 days in a year.

**Lake Survey Number:** 813.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Koratur Lake (Plate 3).

1.2 Villages that surround the wetland include Koratur, Kalikuppam, Karukku, Pudhur, Villivakkam and Madhakuppam.

1.3 & 1.4 The lake is based in Tiruvallur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 06'55.7" N; 13° 07'27.6" N; 13° 07'57.9" N; 13° 07'38.0" N and Longitude: 080° 10'47.6" E; 080° 11'22.3" E; 080° 11'25.1" E; 080° 10'50.6" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Tiruvallur division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 213 hectares (Map 3.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lakes.

2.3 Based on the secondary information the average depth is 4 meters for the wetland.

2.4 The elevation of the wetland is 16 to 36 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area as well as the effluent released form the surroundings.
b) The water in the wetland is intermittent nature with some water always present in the lake, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining Reta eri.
d) The pH of the water was observed to be alkaline and recorded between 7.5 and 7.8.
e) The lake has fresh water with the salinity recorded at 0.604 ppt at the time of sampling.
f) The wetland was observed to be oligotrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages as well as industrial effluents.

2.6 Climatic setting

a) Annual Rainfall for the month of December in Tiruvallur was 6 mm
b) The atmospheric temperature varied between 23.5 and 25.5 °C and the humidity was 74 and 76 %

2.7 The area of zone of influence is 2682 hectares with a fixed buffer area of 2 kms around the wetland (Map 3.6).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forests 0%; | Grassland/Scrubland 0%; |
| Agriculture 0%; | Settlements Rural 0%; |
| Settlements Urban 80 %; | Industries 20%. |

2.9. The comparison of the wetland for the years 2005 and 2017 is given in Map 3.4& 3.5.

**Section III- Biodiversity**

3.1 List of Plant species: 51 species of plants were recorded around the wetland during our visit (Table 3.5).
3.2 List of animal species: 87 animal species including 4 domestic species were recorded during the survey (Table 3.6a-h)
3.3 Species of Conservation importance: One Near Threatened specie of birds and inaddition to one threatened and one vulnerable fish species were observed during the survey (Table 3.6a-h)
3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly major percentage of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: Two invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose due to sewage and effluent contamination. The municipal corporation provides drinking water form the Puzhal lake as well as borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The are few farmlands where agriculture is undertaken around the wetland.
4.3 Fishery is undertaken only as a recreation activity by few locals and not as a livelihood. The fishes are mostly the local species, some individuals capture the fingerlings for ornamental aquaculture practice.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for recreation and jogging track is present with an active civil society group that was observed around the wetland. The wetland is frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area and there is frequent release of effluents that is objected by the locals.
4.10 The wetland has two large and two small temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site is used majorly used by bird enthusiast, morning walkers, and local religious tourist.
4.12 There are no agriculture or plantation activities within the wetland. There are high tension electric wires that pass throught he wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports local fish species and there is no commercial fishery.
4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken only as a recreation and for self consumption. The local varities of fish fries are caught for aquarium fishery by stray individuals for whom it is also a livelihood.
5.2 There is no agriculture undertaken within the wetlands.
5.3 There is growing urbanization around the wetland and there is minimal agriculture around the wetland but is not the main practice for the villagers around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is no withdrawal of water for agriculture or fishery purpose.
5.6 The wetland is used for bathing by livestalk, recreational fishing.
5.7 The locals are well aware of the importance of the wetland with the presence of the civil society group that undertakes regular cleaning and awareness activities around the lake.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The pollution in the form of sewage, effluents, siltation and solidwaste dumping is also an increasing threat to the bird habitat.

6.3 Increasing urbanization and encroachment is a major threat to the wetland despite the civil society actions.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form increasing reclamation, encroachment and solid waste dumping. There are existing industries that are releasing effluents that is detrimental the ecosystem as the wetland is becoming a sink for the waste released into the wetland. Moreover there is an increase in the wetland encroachment activities.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated. These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Koratur Lake**


Ali A., Avittom N., Lone A., Achyuthan H. and Shah R. (2017) Diatom Diversity and Organic Matter Sources in Water Bodies around Chennai, Tamil Nadu, India. *MOJ Eco Environ Sci.* 2(3): 00027.

Anantha Narayanan S., Shinto Kuriyan, Subhasri A. and Jayasri A. (2016) Cost Effective Method to Reduce Turbidity and pH level of Korattur Lake water situated in Chennai Metropolitan City. *International Journal of Scientific & Engineering Research*. Vol.7 Issue. 12.

Deepa P., Raveen R., Venkatesan P., Arivoli S. and Samuel T. (2016) Seasonal variations of physicochemical parameters of Koratturlake, Chennai, Tamil Nadu, India.*International Journal of Chemical Studies*: 4(3): 116-123

Krishnakumari B., Deepa K. and Priya, K.V. (2016) A Review on impact of land use over Water Bodies in Chennai. *in Proceedings* International Conference on Breakthrough in Engineering, Science & Technology. 379-385.

Priyanga G., Abhirami B. and Gowri N.R. (2015) Phyto-remediation of urban lakes in and around Chennai.Journal of Chemical and Pharmaceutical Sciences. Vol 8 (2): 288-291.

Sunantha Gandsan and Namasivayam Vasudevan (2016) Assessment of perfluorooctanoic acid and perfluorooctand sulfonate in surface water - Tamil Nadu, India Marine Pollution Bulletin Volume 109, Issue 1, 15 August: 612-618.


Table 3.5: List of Plant species recorded along the Korattur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Indigofera linifolia* | Narrowleaf Indigo | Iraththina Maalai | Fabaceae | Native | LC |
| 8 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 9 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 11 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 12 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 13 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 14 | *Cucurbita moschata* | Butternut Pumpkin, | Pucani | Cucurbitaceae | Introduced | |
| 15 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 16 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 17 | *Morinda coreia* | Indian Mulberry, | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 18 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 21 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 22 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 23 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 24 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 25 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 26 | *Solanum elaeagnifolium* | Silverleaf nettle | | Solanaceae | Invasive | NA |
| 27 | *Barleria acuminata* | Long-flower Barleria | Vellai Kurinji | Acanthaceae | Native | NA |
| 28 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |
| 29 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 30 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 31 | *Vitex negundo* | Chaste Tree | Nocchi | Lamiaceae | Native | NA |
| 32 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 33 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 34 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 35 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 36 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 37 | *Amaranthus spinosus* | Prickly Amaranth | Mullukkeerai | Amaranthaceae | Exotic | NA |
| 38 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 39 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 40 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 41 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 42 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 43 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 44 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 45 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 46 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 47 | *Aristida adscensionis* | | | Poaceae | Native | NA |
| 48 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 49 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 50 | *Eleusine indica* | Indian crowfoot grass,Indian goose grass,Wiregrass | Thippa ragi, Keveru | Poaceae | Native | LC |
| 51 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |

LC- Least Concern, NA - Not Assessed

Table 3.6a: List of Insects recorded along the Korratur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | ArborialBicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 3.6b: List of Butterflies recorded along the Korratur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 6 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Common Crow | *Euploea core* | Danainae | Common |
| 12 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 13 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 14 | Common Castor | *Ariadne merione* | Biblidinae | Common |
| 15 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 16 | DanaidEggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 3.6c: List of Dragonflies recorded along the Korratur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Trumpet Tail | *Acisoma panorpoides* | Libellulidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 7 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 8 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 3.6d: List of Arachnida recorded along the Korratur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 3.6e: List of Fishes recorded form the Korratur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 9 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 12 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodi meen | Clupeidae | LC |
| 13 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 3.6f: List of Reptiles recorded along the Korratur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Water Snake | *Xenochro phispiscator* | Colubridae | Least Concern |

Table 3.6g: List of Birds recorded along the Korratur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 6 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 7 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 8 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 9 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 10 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 11 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 12 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 13 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 14 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 15 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 16 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 17 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 18 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 19 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 20 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 21 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 22 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 23 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 24 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 25 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 26 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 27 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 28 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 29 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 30 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 31 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 32 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 33 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 34 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 35 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

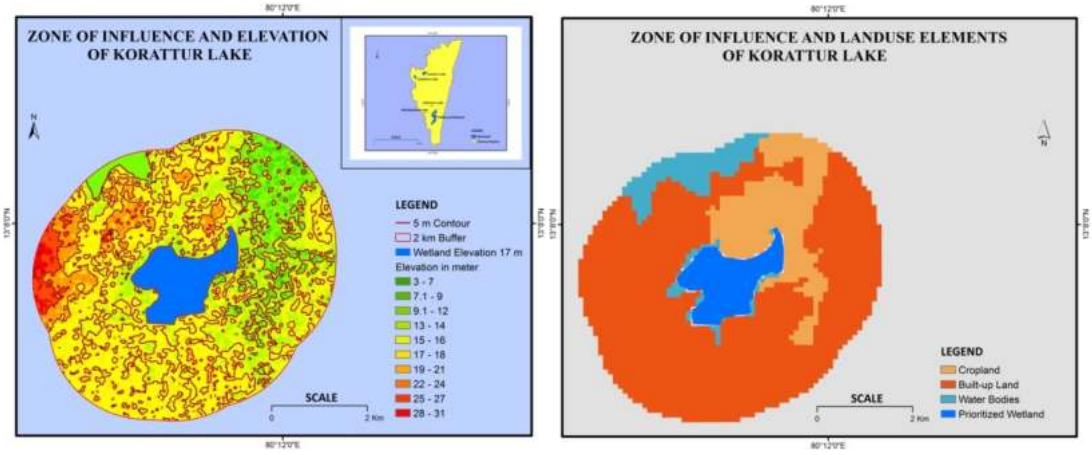
Table 3.6h: List of Mammals recorded along the Korratur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 3.4: Comparative Google imagery for Korattur Lake**




**Map 3.5: The zone of influence around the Korattur Lake**



**Madipakkam Lake**

**Lake Survey Number:** not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Madipakkam Lake (Plate 4).

1.2 Villages that surround the wetland include Karitkapuram, Madipakkam and Iyyapamn Nagar.

1.3 & 1.4 The lake is based in Chennai Corporation of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 57'29.8" N; 12° 57'33.8" N; 12° 57'46.3" N; and Longitude: 080° 11'20.7" E; 080° 11'23.1" E; 080° 11'27.0" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 17.5 hectares (Map 3.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Seasonal intermittant tank.

2.3 Based on the secondary information the average depth is 1 to 1.5 meters for the wetland.

2.4 The elevation of the wetland is 12 to 22 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff (Thirisulam hills) form the catchment area and the sewage outflow.
b) The water in the wetland is intermittant in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow goes to the sea.
d) The pH of the water was 9.6.
e) The lake has fresh water and the salinity recorded was 0.393 ppt.

2.6 Climatic setting

a) Rainfall for the month of August, 2018 in Chennai was 3.1mm.
b) The atmospheric temperature was 32°C and the humidity was 45 %

2.7 The area of zone of influence is 1701.62 hectares with a fixed buffer area of 2 kms around the wetland (Map 3.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 0%; | Settlements (rural) 0% |
| Settlements (Urban) 95%; | Industrial 5% |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 3.6 & 3.7.

**Section III- Biodiversity**

3.1 List of Plant species: 30 species of plants were recorded around the wetland during our visit (Table 3.7).

3.2 List of animal species: 40 animal species including 6 domestic species were recorded during the survey (Table 3.8a-g)

3.3 Species of Conservation importance: One Threatened species of bird was observed during the survey (Table 3.8a-g)

3.4 Major Plant invasive alien species and extent of invasion: Six invasive plant species including *Parthenium hysterophorus* and *Ipomoea sp.*formed nearly the major part of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: There is the presence of *Tilapia sp* and introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose or agriculture. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the Velacherry and Bay of Bengal.
4.3 Fishery is undertaken for commercial purpose, but locals and children undertake recreational fishery.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it has highly encroached banks.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is used majorly used by the locals for dumping garbage and as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the role the wetland played during the monsoon floods and cyclone.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly.

**Section VII Notification Category**

The wetland is not is a bird sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published literature available for Madippakkam Lake

Table 3.7: List of Plants recorded along the Madippakkam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 3 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 7 | *Senna occidentalis* | Coffee senna | Nattamtakarai, Payaverai | Fabaceae | Native | NA |
| 8 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 9 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 10 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 11 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 12 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 13 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 14 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 15 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 16 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 17 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 18 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 19 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 20 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 21 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 22 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 23 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 24 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 25 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 26 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 27 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 28 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 29 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 30 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 3.8a: List of Insects recorded along the Madippakkam Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 8 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 3.8b: List of Moth and Butterfly recorded along the Madippakkam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 2 | Rattlebox Moth | *Utetheisa pulchella* | Erebidae | Common |

Table 3.8c: List of Odonata recorded along the Madippakkam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 3.8d: List of Fishes recorded form the Madippakkam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 2 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 3 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 4 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 3.8e: List of Reptiles recorded along the Madippakkam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Category |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 3.8f: List of Birds recorded along the Madippakkam Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 2 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 3 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 4 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 5 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 6 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 7 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 8 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 9 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 10 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 11 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 12 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 13 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

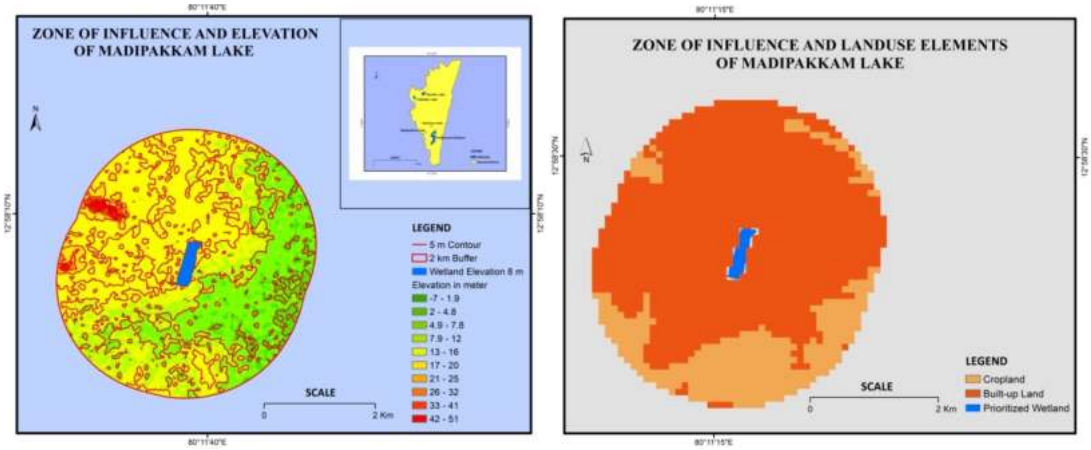
Table 3.8g: List of Mammals recorded along the Madippakkam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Cat | *Felis catus* | Felidae | Domestic |
| 6 | Pig | *Sus domesticus* | Suidae | Domestic |
| 7 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 3.6: Comparative Google imagery for Madippakkam Lake**




**Map 3.7: The zone of influence around the Madippakkam lake.**



**Pallikaranai Wetland**

Pallikaranai wetland is a freshwater marsh near the city of Chennai. It is situated adjacent to the Bay of Bengal, about 20 kilometers (12 mi) south of the city centre, and has a geographical area of 80 square kilometers (31 sq mi). Pallikaranai marshland is the only surviving wetland ecosystem of the city and is among the few and last remaining natural wetlands of South India.

**Lake Survey Number**: 429 to 432, 434, 444, 453, 657, 658.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Pallikarani Marsh, or Pallikarani wetland or Pallikarani Bird Sanctuary.(Plate 4)

1.2 Villages that surround the wetland include Pallikarani, Balaji Nagar, Thooraipakkam, Narauyanapuram, Velacherry, Kaivelli, Madipakkam, Santhoshpuram, etc.

1.3 & 1.4 The wetland is based in Chennai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 56'58.0" N; 12° 56'57.5" N; 12° 56'54.5" N; 12° 56'33.3" N; 12° 56'32.5" N and Longitude: 080°13'34.4" E; 080°13'22.8" E; 080°12'49.5" E; 080°13'02.9" E; 080°13'05.3" E

1.6 The wetland is a Protected Area and a Bird Sanctuary, it is also included under the national wetland conservation and management program since 1985.

1.7 The wetland comes under the jurisdiction of Chennai Region and the forest department.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 834 hectares (Map 3.8).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent creek.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 5 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and some minor connection With the Bay of Bengal.
b) The water in the wetland is mostly of permanent nature.
c) The water form the wetlands forms a main source for the cattle and to a minor extent used in the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded up to 9.0.
e) The lake has fresh water with the salinity recorded at 1.824 ppt at the time of sampling.
f) The wetland was observed to be Mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfall for the month of December 2017 in Chennai was 68.2 mm.
b) The atmospheric temperature was 27.5 °C and the humidity was 55 %

2.7 The area of zone of influence is 5086.98 hectares with a fixed buffer area of 2 kms around the wetland (Map 3.9).

2.8 The major land use around the wetland comprised of

Agriculture 5%; Grasslands/shrubland 25%;
Urban Settlements 35%; Industrial 30%.

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 3.8 & 3.9.

**Section III- Biodiversity**

3.1 List of Plant species: 30 species of plants were recorded around the wetland during our visit ( Table 3.9).

3.2 List of animal species: 93 faunal species excluding 3 domestic species were recorded during the survey (Table 3.10a-h)

3.3 Species of Conservation importance: Migratory and Common species of birds were observed during the survey with four threatened category birds and one near threatened fish were recorded during our survey (Table 3.10a-h).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Ipomoea sp,* and *Microcystis sp.*formed nearly 80 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: The wetland is in a much polluted status with veryminimal fishery and mostly comprises of carps.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around the wetland and minimal water is used for irrigation.

4.3 Fishing is undertaken in the wetland by very few individuals as a community right.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is a site for recreation and is frequented by nature enthusiast for bird watching as it is also a bird sanctuary.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The bird enthusiasts visit the wetland.

4.12 There are no agriculture or plantation activities within the wetland

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports fishery, the seeds for which are released by the fisheries department.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is minimal commercial fishing activity and some recreational fishery is undertaken.

5.2 Major portion of the water is utilized by cattle and for some agriculture.

5.3 Agriculture is undertaken around the wetland and not within the wetland.

5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.

5.5 The water is not used for domestic purposes.

5.6 The wetland is used for bathing by live stalk is undertaken for fishing as well as for some recreation.

5.7 Religious and cultural functions are performed along the banks of the wetland.

**Section VI Present and potential threats**

6.1 The wetland show a major change in the pattern of water inflow and outflow.

6.2 There is release of sewage, effluents and solidwaste dumping along the banks of the wetland is too high and uncontrolled.

6.3 There is increase in industralization and urbanization around the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland has idol immersion while solid waste dumping and encroachment activities are observed on a large scale.

**Section VII Notification Category**

The wetland is declared as a Bird Sanctuary and also included in the National Wetland Conservation and management program.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

There are developmental activities that are taking place around the wetland that include setting up of new industries, encroachment and agriculture. Moreover the release of effluents and sewage has to be regulated and treated.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment for developmental activities by public and government agencies need a serious thought before the marsh can be completely wiped out.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Pallikarani Marsh


Azeez P. A., Bhupathy S., Ranjini J., Dhanya R. and Nikhil Raj P.P. (2007) Management Plan for the Eco-restoration of Pallikaranai Reserve Forest. Sálim Ali Centre for Ornithology and Natural History.Submitted to Forest Department Tamil Nadu.

Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

Jayaprakash M., Urban B., Velmurugan P.M. and Srinivasalu S. (2010) Accumulation of total trace metals due to rapid urbanization in microtidal zone of Pallikaranai marsh, South of Chennai, India Environ Monit Assess 170: 609.

Karpagavalli M. Sridevi, Malini P. and Ramachandran A. (2012) Analysis of heavy metals in dying wetland Pallikaranai, Tamil Nadu, IndiaJournal of Environmental Biology; ucknow Vol. 33, Iss. 4: 757-61.

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Nagalakshmi R. and Prasanna K. (2016) 2015 Flood assessment in Kanchipuram district of Tamil Nadu using GIS Rasayan Journal of Chemistry Vol. 9 (No. 4): 798 - 805

PWD. (2000) Groundwater perspectives: a profile of Kancheepuram District, Tamil Nadu. Public Works Department, Tamil Nadu, June, 220 pp

Raj P.P.N., Ranjini J., Dhanya R., Subramanian J., Azeez P.A. Bhupathy S. (2010) Consolidated checklist of birds in the Pallikaranai Wetlands, Chennai, India DOI: http://dx.doi.org/10.11609/JoTT.o2220.1114-8

Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern India Hydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0

Senthilkumar M., Gnanasundar D. and Sampath Kumar E. (2018) Deciphering Freshwater/Saline Water Interface in and Around Northern Chennai Region, Southern India. In: Saha D., Marwaha S., Mukherjee A. (eds) Clean and Sustainable Groundwater in India. Springer Hydrogeology. Springer, Singapore


Table 3.9: List of Plants recorded along the Pallikarani Wetland

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 5 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 6 | *Emilia sonchifolia* | Purple Sow Thistle | Muyalchevi | Asteraceae | Native | NA |
| 7 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 8 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 9 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 11 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 12 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 13 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, | Euphorbiaceae | Native | NA |
| 14 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 15 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 16 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, | Commelinaceae | Native | LC |
| 17 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 18 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 19 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 20 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 21 | *Pedalium murex* | Large caltrops | Yanai nerunji, | Pedaliaceae | Native | NA |
| 22 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 23 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 24 | *Albizia lebbeck* | Siris Tree, | Siridam | Fabaceae | Native | NA |
| 25 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 26 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 27 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 28 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 29 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |
| 30 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table3.10a: List of Insects recorded along the Pallikaranai Wetland

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Weaver Ant | *Oecophylla smaragdina* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 3.10b: List of Butterflies recorded along the Pallikaranai Wetland

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 8 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 9 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 10 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 11 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Common Crow | *Euploea core* | Danainae | Common |
| 14 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 15 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 16 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 17 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 18 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 3.10c: List of Odonata recorded along the Pallikaranai Wetland

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table3.10d: List of Arachnida recorded along the Pallikaranai Wetland

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 3.10e: List of fishes recorded form the Pallikaranai Wetland

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 5 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 12 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodi meen | Clupeidae | LC |
| 13 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table3.10f: List of Reptiles recorded along the Pallikaranai Wetland

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 3.10g: List of Birds recorded along the Pallikaranai Wetland

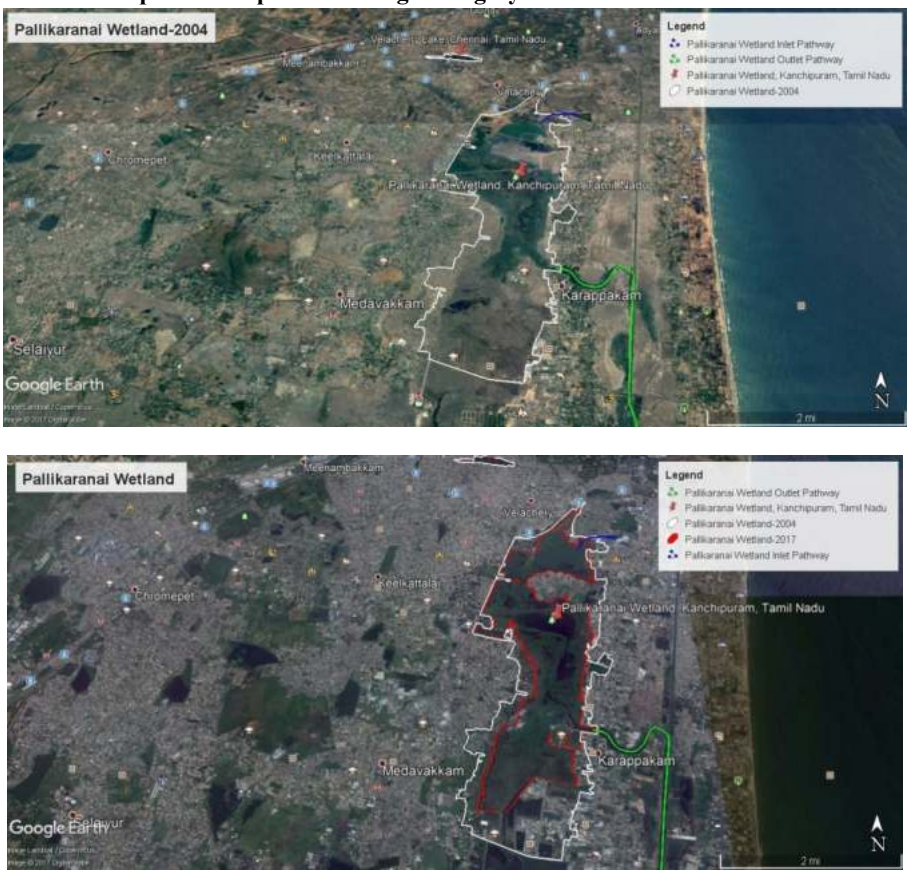
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 3 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 4 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 5 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 6 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 7 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 8 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 9 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 10 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 11 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 12 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 13 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 14 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 15 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 16 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 17 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 18 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 19 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 20 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 21 | Grey-headed Lapwing | *Vandllus cinereus* | Charadriidae | Least Concern |
| 22 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 23 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 24 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 25 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 26 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 27 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 28 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 29 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 30 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 31 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 32 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 33 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 34 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 35 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 36 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 37 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 38 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 39 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 40 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 41 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 42 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 43 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

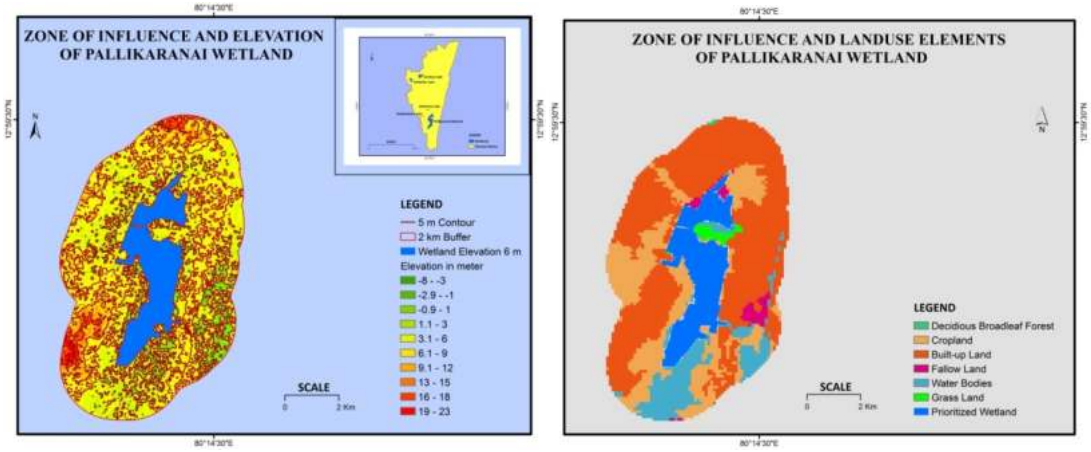
Table3.10h: List of Mammals recorded along the Pallikaranai Wetland

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian grey Mongoose | *Herpestes edwardsi* | Herpestidae | Least Concern |

**Map 3.8: Comparative Google imagery for Pallikaranai Wetland**




**Map 3.9: The zone of influence around the PallikarnaiWetland**



**Velachery Lake**

**Lake Survey Number:** 123/1PT

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Velachery Lake (Plate 5).

1.2 Villages that surround the wetland include Velachery, Vijaya Nagar, Adhambakkam, RamNagar and Kakkan nagar.

1.3 & 1.4 The Lake is based in Chernnai Corporation of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 59'19.8" N; 12° 59'21.4" N; 12° 59'19.0" N; and Longitude: 080° 12'54.2" E; 080° 12'48.1" E; 080° 12'33.1" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of Chernnai Corporation of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 21.4 hectares (Map 3.10).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category permanent tank (water is present throughout the year due to the release of the sewage into the wetlands).

2.3 Based on the secondary information the average depth is 3 meters for the wetland.

2.4 The elevation of the wetland is 8 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and the sewage outflow.
b) The water in the wetland is permanent in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the Pallikarani marsh.
d) The pH of the water was to 8.5
e) The lake has fresh water and the salinity recorded was 0.532 ppt.
f) The wetland had aquatic vegetation like *Ipomoea sp*. and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Chennai was 3.1mm.
b) The atmospheric temperature was 29.1°C and the humidity was 54 %

2.7 The area of zone of influence is 1883.95 hectares for the years 2009 and 2017 is attached (Map 3.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 5%; |
| Agricultural lands 0%; | Settlements (rural) 0% |
| Settlements (Urban) 90%; | Industrial 5% |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 3.10 & 3.11.

**Section III- Biodiversity**

3.1 List of Plant species: 34 species of plants were recorded around the wetland during our visit (Table 3.11).

3.2 List of animal species: 41 animal species including 4 domestic species were recorded during the survey (Table 3.12 a-g)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey but two near threatened fish species were reported (Table 3.12 a-g)

3.4 Major Plant invasive alien species and extent of invasion: 11 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.*formed nearly major proportion of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: There is the presence of *Tilapia sp* and introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose or agriculture. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the Pallikarani Marsh.
4.3 Fishery is not undertaken for commercial purpose, but locals and children undertake recreational fishery.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it has highly encroached banks.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is used majorly used by the locals for dumping garbage and as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded a few bird species during our survey.
4.14 The wetland supports local fish species.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the role the wetland played during the monsoon floods and cyclone.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly.

**Section VII Notification Category**

The wetland is not is a bird sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**
**Literature available for Velachery Lake**

Altaff, K., Janakiraman, A. and Asrar Sheriff, M. (2016) Phytoplankton diversity of freshwater bodies of Chennai, India. *International Journal of Environmental Biology* 2016; 6(2): pp. 34-42, ISSN 2277–386X.

Bhadresh R. Sudani, Darshan M. Thummar, Ketan M. Sojitra, Ajay D. Gajera and Smit S. Bavriya (2014) Lab Scale Study of Water Hyacinth for Bioremediation of Waste Water *International Journal of Research in Advent Technology*, Vol.2, No.5, May 2014 E-ISSN: 2321-9637.

Gomathi Jeyam, M. and Ramanibai, R. (2017) Impact of Genotoxic Contaminants on DNA Integrity of Copepod form Freshwater Bodies in Chennai, Tamil Nadu, India, *Journal of Environmental and Analytical Toxicology* 2017, Volume 7, Issue 3, ISSN: 2161-0525, pp. 1-5,

Jaikumar, M. (2012) A Review on Water Hyacinth (*Eichhornia crassipes*) and Phytoremediaton to treat Aqua pollution in Velachery lake, Chennai - Tamil Nadu, *International Journal of Recent Scientific Research*, Vol. 3, Issue, 2, pp. 95-102, February, 2012, ISSN: 0976-3031.

Muthuswamy Jayakumar (2012) A Review on Water hyacinth (*Eichhornia crassipes*) and Phytoremediaton to treat Aqua pollution in Velachery Lake, Chennai, Tamil Nadu. International Journal of Recent Scientific Research Vol. 3, Issue, 2, pp.95-102, February, 2012, ISSN: 0976-3031.

Rajabunizal, K. and Ramanibai, R. (2011) Presence of an Epibiont *Epistylis niagarae* (Protozoa, Ciliophora) on Mesocyclops aspericornis in Velachery lake Chennai India., *Journal of Biological Science*, 99 (2) 189-195, 2011.

Ramanibai Ravichandran. and Gomathi Jeyam, M. (2014) Copepods form few freshwater bodies of periurban areas of South Chennai, *The International Journal of Engineering and Science (IJES)*, Volume 3, Issue 4, 2014, ISSN: 2319-1813, pp. 51-53.

Table 3.11: List of Plant species recorded along the Velachery Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 2 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 3 | *Mangifera indica* | Mango | Ma | Anacardiaceae | Native | DD |
| 4 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 5 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 6 | *Senna didymobotrya* | Popcorn Cassia | --- | Caesalpiniaceae | Native | NA |
| 7 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 8 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 9 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 10 | *Alangium salviifolium* | Sage leaved Alangium | Alandi | Cornaceae | Native | NA |
| 11 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 12 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 13 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 14 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 15 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 16 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 17 | *Alternanthera philoxeroides* | Alligator Weed | | Amaranthaceae | Invasive | NA |
| 18 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 19 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 20 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 21 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 22 | *Jatropha curcas* | Psychic Nut | Kaattuamanakku, | Euphorbiaceae | Invasive | NA |
| 23 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 24 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 25 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 26 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, | Commelinaceae | Native | LC |
| 27 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 28 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 29 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 30 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |
| 31 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 32 | *Echinochloa crus-galli* | Barnyard Grass | | Poaceae | Native | LC |
| 33 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 34 | *Urochloa setigera* | Signal grass | | Poaceae | Native | NA |

Table 3.12a: List of Insects recorded along the Velachery Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |

Table 3.12b: List of Butterflies recorded along the Velachery Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 6 | Common Crow | *Euploea core* | Danainae | Common |
| 7 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 8 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 3.12c: List of Odonata recorded along the Velachery Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 3.12d: List of Fishes recorded form the Velachery Lake

| S. No | *Scientific Name* | Common English Name | Local Tamil Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 11 | *Anabas testudineus* | Climbing erch | Panangottai meen, | Anabantidae | DD |
| 12 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 3.12e: List of Reptiles recorded along the Velachery Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Water Snake | *Xenochrophis piscator* | Colubridae | Least Concern |

Table 3.12f: List of Birds recorded along the Velachery Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 3 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 4 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 5 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 6 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 7 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 8 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

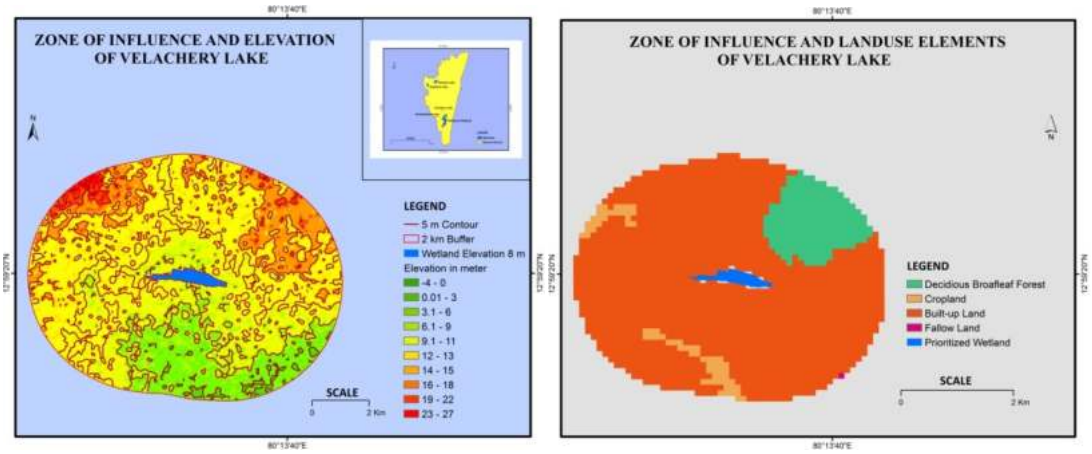
Table 3.12g: List of Mammals recorded along the Velachery Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Cat | *Felis catus* | Felidae | Domestic |

**Map 3.10: Comparative Google imagery for Velachery Lake**



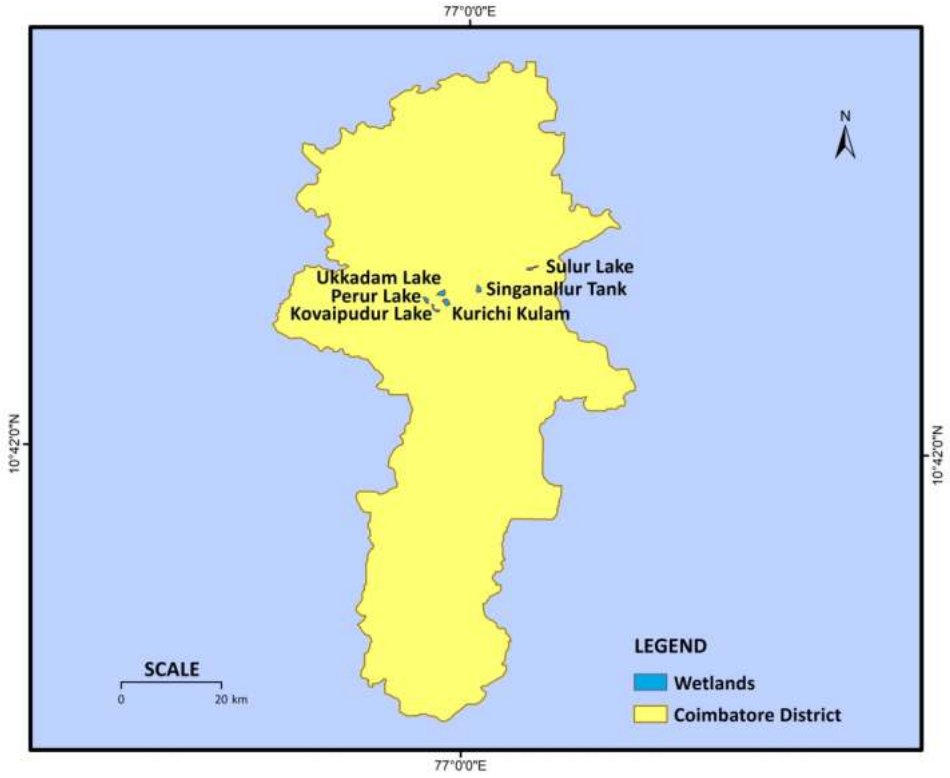

**Map 3.11: The zone of influence around the Velachery lake**



## 4: Coimbatore District

Coimbatore District has a geographic area of 7,47,079 hectares, it is located between 10° 55' and 11° 10'N and 77° 10' and 76° 50' E with an approximate altitude of 470m. It forms part of the upland plateau region of Tamil Nadu with many hill ranges, hillocks and undulating topography with gentle slopes towards east form the hilly terrain in the west. The River Noyyal is a prominent and historical feature of Coimbatore and surrounding districts of Erode and Tirupur. During the Kongu Chola regime in the 8$^{th}$ and 9$^{th}$ centuries AD, 28 interconnected wetlands were constructed for irrigation and flood mitigation on both sides of the River Noyyal. The wetlands provide an ideal habitat for several wetland birds apart for bearing the brunt of industrialization and urbanization.

SACON during 2004 had prioritized four wetlands form Coimbatore district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these four to assess its present potential for conservation. And the other two based on the available literature. Among the six wetlands selected only two wetlands *i.e* Singanallur and Ukkadam are within the city limits while the other four are located on the outskirts of the city (Map 4.1).




**Map 4.1: Wetlands of Coimbatore District assessed for Prioritization.**

### Observations

Of the six wetlands selected in the district, Kurichi lake is the largest while Kovai Pudur wetland is the smallest. Around the six wetlands, we recorded 167 plant species both aquatic and terrestrial including 16 invasive species (Table 4.1). The faunal components totaled 175 species with the representation of 73 bird species including the wetland birds. The field study revealed that Singanallur and Sulur Lake were Mesotrophic with high levels of phosphorus while the other four wetlands were Oligotrophic in status (Table 4.2). The high levels of Phosphorus in Perur wetland was mainly due to the agricultural practices and plantation activities around and within the wetland. The soil form Perur lake showed higher levels of the lesser elements compared to the other

wetlands also corroborated. The soil is regularly hydrated annually and hence formed a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Sulur Lake. Mining of lake sediments is a major threat to all the wetlands in addition to the release of sewage and effluents that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged during rainfall, the wetlands are prioritized in the following order for conservation:

1. Perur Lake
2. Kovaipudur Lake, Kuruchi Kulam
3. Singanallur Tank, Ukkadam
4. Sulur Lake

Table 4.1: The flora and fauna recorded form the wetlands of Coimbatore District

| S. No | Name of the Wetland | Plants | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Kovaipudur Lake | 59(11) | 4 | 5 | 9 | 2 | 13 | 0 | 2 | 41 | 5 |
| 2 | Sulur Lake | 81(14) | 12 | 4 | 36 | 2 | 14 | 0 | 3 | 49 | 4 |
| 3 | Singanallur Lake | 49(11) | 10 | 7 | 31 | 2 | 15 | 0 | 3 | 40 | 4 |
| 4 | Perur Kulam | 55(10) | 2 | 4 | 3 | 1 | 13 | 0 | 1 | 18 | 4 |
| 5 | Kurichi Lake | 52(9) | 9 | 9 | 16 | 0 | 10 | 0 | 2 | 39 | 6 |
| 6 | Ukkadam Lake | 71(12) | 9 | 8 | 15 | 0 | 12 | 0 | 2 | 38 | 4 |
| | | 167 | 19 | 10 | 44 | 2 | 17 | 0 | 3 | 73 | 7 |

Table 4.2: The water and soil quality assessed form the wetlands of Coimbatore District

| District Name | Coimbatore | Coimbatore | Coimbatore | Coimbatore | Coimbatore | Coimbatore |
|---|---|---|---|---|---|---|
| Wetland Name | Kurichi Lake | Ukkadam Lake | Perur Lake | Kovaipudur | Sulur Lake | Singanallur Tank |
| Wetland Area (ha) | 132 | 129 | 82.9 | 62.8 | 85.9 | 106 |
| Buffer Area in Hectare (ha) | 2184.31 | 2252.02 | 2318.75 | 2057.41 | 2107.64 | 2398.59 |
| Air Temperature °C | 29 | 27.8 | 31.3 | 31.3 | 31 | 32 |
| Water Temperature °C | 30 | 30.6 | 23.6 | 23.6 | 23.6 | 21 |
| Humidity % | 41 | 40 | 63 | 68 | 65 | 68 |
| Nutrients in Water | Oligotrophic | Oligotrophic | Oligotrophic | Oligotrophic | Mesotrophic | Mesotrophic |
| Water pH | 8.9 | 8.91 | 7.9 | 7.9 | 7.4 | 7.8 |
| Water TDS ppm | 258 | 1220 | 945 | 225 | 730 | 846 |
| Water Conductivity ppm | 363 | 1780 | 1000 | 265 | 1180 | 934 |
| Light Penetration cms | 54 | 25 | 86 | 95 | 115 | 102 |
| Water Salinity ppt | 0.177 | 0.862 | 0.425 | 0.353 | 0.425 | 0.604 |
| DO mg/L | 6.10 | 4.07 | 5.89 | 7.52 | 5.69 | 6.50 |
| PO4P mg/L | 0.006 | 0.004 | 0.655 | 0.004 | 0.061 | 0.038 |
| Water Na ppm | 19 | 305 | 281 | 27.3 | 297 | 270 |
| Water K ppm | 6.7 | 24.7 | 76.6 | 6.1 | 26.55 | 24.9 |
| Water Li ppm | 0.1 | 0.4 | 0.7 | 0 | 0.3 | 0.35 |
| Water Ca ppm | 43.6 | 77.8 | 79.9 | 25.4 | 48 | 59.1 |
| Soil Colour code | 7.5YR 6/4 | 10YR 5/4 | 10YR 5/8 | 10YR 6/3 | 10YR 5/8 | 10YR 4/4 |
| Soil Colour | Light Brown | Yellowish Brown | Yellowish Brown | Pale Brown | Yellowish Brown | Dark Yellowish Brown |
| Soil pH | 7.78 | 8.04 | 8 | 7.07 | 7.7 | 7.44 |
| Soil TDS ppm | 158 | 435 | 920 | 75.5 | 433 | 338 |
| Soil Conductivity ppm | 222 | 613 | 1298 | 106.2 | 609 | 476 |
| Soil Salinity ppt | 0.107 | 0.297 | 0.647 | 0.054 | 0.295 | 0.23 |
| Soil Na ppm | 6.3 | 81.1 | 104.4 | 7.9 | 25.1 | 23.8 |
| Soil K ppm | 8.5 | 11.2 | 68.9 | 3 | 17.5 | 10.1 |
| Soil Li ppm | 0 | 0.1 | 0.5 | 0 | 0.2 | 0.1 |
| Soil Ca ppm | 18.9 | 36.7 | 70.9 | 4.6 | 39.7 | 30.2 |

**Kovaipudur Lake**

This wetland (Latitude: 10° 57'10.1" N and Longitude: 076° 56'27.1" E) is situated outside the Coimbatore city limits and is under the jurisdiction of Kuniyamuthur municipality. The wetland gets its name form the Kovaipudur township and is also known as Senkulam lake. Kovaipudur lies at the mouth of the Palghat Pass and at the south western fringe of the Coimbatore city, bordering the Western Ghats at the foothills of the Madukkarai range in Coimbatore and the Walayar ranges in Kerala. Kovaipudur has mainly scrub vegetation as these hills make it a rainshadow area. The wetland was connected to the Noyyal River and has remained undisturbed by industrial activities.

It has a catchment area of 576.8 hectares with the current lake bed area of 107.242 hectares and a water storage capacity of 30.51 Mcft. The length of the bund on the lake extends to 2200 m. It receives excess water form the Perur lake and has two major outlets. The major concern around the wetland is the increase of residential areas, solid waste dumping and agriculture incursion.

**Lake Survey Number:** 24, 297.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kovai Pudur Lake and also known as Sengulam lake (Plate 6).

1.2 Villages that surround the wetland include Kulathupalayam, Kuniyamuthur, Vaikappalayam, Sundakkamuthur. These villages come under Coimbatore South Thesil.

1.3 & 1.4 The lake is based in Coimbatore District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: form 10° 57'10.1" N to 10° 57'36.5" N and Longitude form :076° 56'27.1" E to 076° 56'22.0" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of Municipal Corporation of Coimbatore city since 2015.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 83.3 hectares (Map 4.2).

2.2 The Wetland type - the wetlands in Coimbatore belong to the Human Made category in the sub category Tanks.

2.3 Based on the secondary information the average depth is 3 meters for the wetland.

2.4 The elevation of the wetland is 421 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the overflow form the Noyyal River and the surrounding runoff form the catchment area.
b) The water in the wetland is of interminent nature with seasonal drying bouts, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded at 7.9
e) The lake has fresh water with the salinity recorded at 0.353 ppt at the time of sampling.
f) The wetland was observed to be oligotrophic as the wetland was clear of all the macrophytes. The wetland does receive domestic sewage form the surrounding villages as well as some quantity of industrial effluents form the adjoining plastic factory.

2.6 Climatic setting

a) Rainfall for the month of November in Coimbatore was 7 cm.
b) The atmospheric temperature varied between 22 and 25 °C and the humidity was 90%

2.7 The area of zone of influence is 2318.75 hectares with a fixed buffer area of 2 kms around the wetland (Map 4.3).

2.8 The major land use around the wetland comprised of 50% agriculture, 30% Rural human settlements 15% new constructions and 5% Industries.

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 4.2 & 4.3.

**Section III- Biodiversity**

3.1 List of Plant species: 54 species of plants were recorded around the wetland during our visit (Table 4.3).

3.2 List of animal species: 81 animal species including 4 domestic species were recorded during the survey (Table 4.4 a-i).

3.3 Species of Conservation importance: Three near Threatened species of birds and one vulnerable fish species were observed during the survey (Table 4.4 a-i).

3.4 Major Plant invasive alien species and extent of invasion: 11 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose due to sewage and effluent contamination. The municipal corporation provides drinking water form the Shiruvani reservoir as well as borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is a major activity around the wetland however; the water used is mostly form the ground water.

4.3 Fishery is a major livelihood option in the wetland and fishing is done on the basis of tender through a society allowed buy the municipal corporation. The fish seed is introduced and mostly comprises of the common carps.

4.4 The wetlland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area and due to deforestation the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has a major temple called *Dhutrayan* along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is only used majorly used by bird enthusiast but there are no other boating or recreational activities in the wetland.

4.12 The wetland is used for agriculture and banana plantation forms one of the major produce at the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our field study.

4.14 The wetland supports fishery that is basically the cultured edible fish.

4.15 Around the wetland we observed encroachment and solid waste dumping. But there was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken with permission/ lease form the local municipality, the fish is mainly introduced and there has been no assessment of the local or endemic fishery.

5.2 Banana Plantation is undertaken within the wetlands with permission form the municipality.

5.3 Agriculture is the main practice within and around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is no withdrawal of water for agriculture or fishery purpose.

5.6 There was no sign of boats or bathing by human or livestock observed at the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is also an increasing threat to the bird habitat.

6.3 The interior regions of the wetland is used for agriculture and plantation that can adversely affect the habitat.

6.4 There is an increase in the invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form reclamation and encroachment, solid waste dumping. There are existing industries that are releasing effluents that are detrimental the ecosystem as the wetland is becoming a sink for the waste released into the wetland. Moreover there is an increase in the wetland activities.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There is agriculture, plantation and fishery activities that are currently being undertaken, however these activities should remain limited as it can affect the water holding potential of the wetland apart form it providing habitat to the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Kovai Pudur Lake


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Table 4.3: List of Plants recorded along the Kovaipudur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 4 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Oxalis corniculata* | Creeping Wood Sorrel | Puliyarai, Paliakiri | Oxalidaceae | Invasive | NA |
| 8 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 11 | *Crotalaria fysonii* | Fyson's Rattlepod | --- | Fabaceae | Native | LC |
| 12 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 13 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 14 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 15 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 16 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 17 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 18 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 19 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 20 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 21 | *Glinus lotoides* | Lotus Sweetjuice | Cheruppadai, | Molluginaceae | Native | |
| 22 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 23 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 24 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 25 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 26 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 27 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 28 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 29 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 30 | *Solanum nigrum* | Black nightshade, Blackberry nightshade, Nightshade, | Manathakkali | Solanaceae | Native | NA |
| 31 | *Tecoma stans* | Yellow bells | Sonnapatti | Bignoniaceae | Exotic | NA |
| 32 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 33 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 34 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 35 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 36 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 37 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 38 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 39 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 40 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 41 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 42 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 43 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 44 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 45 | *Musa paradisiaca* | Banana Plant | Vaazhaimaram | Musaceae | Native | NA |
| 46 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 47 | *Commelina benghalensis* | Bengal Dayflower | Adutinnathalai | Commelinaceae | Native | LC |
| 48 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 49 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 50 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 51 | *Cyrtococcum trigonum* | | --- | Poaceae | Native | NA |
| 52 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 53 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |
| 54 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.4a: List of Diplopoda recorded along the Kovaipudur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 4.4b: List of Insects recorded along the Kovaipudur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |

Table 4.4c: List of Butterflies recorded along the Kovaipudur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 3 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 4 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 6 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 7 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |
| 8 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 9 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 4.4d: List of Dragonflies recorded along the Kovaipudur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 4.4e: List of Arachnida recorded along the Kovaipudur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 4.4f: List of Fishes recorded form the Kovaipudur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 10 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 11 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 12 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 13 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.4g: List of Reptiles recorded along the Kovaipudur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 4.4h: List of Birds recorded along the Kovaipudur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 4 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 8 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 9 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 10 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 11 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 12 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 13 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 14 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 15 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 16 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 17 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 18 | Yellow-wattled Lapwing | *Vandllus malabaricus* | Charadriidae | Least Concern |
| 19 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 20 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 21 | Marsh Sandpiper | *Tringa stagnatilis* | Scolopacidae | Least Concern |
| 22 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 23 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 24 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 25 | Little Stint | *Calidris minuta* | Scolopacidae | Least Concern |
| 26 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 27 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 28 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 29 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 30 | Common Hoopoe | *Upupa epops* | Upupidae | Least Concern |
| 31 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 32 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 33 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 34 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 35 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 36 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 37 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 38 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 39 | Yellow Wagtail | *Motacilla flava* | Motacillidae | Least Concern |
| 40 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 41 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

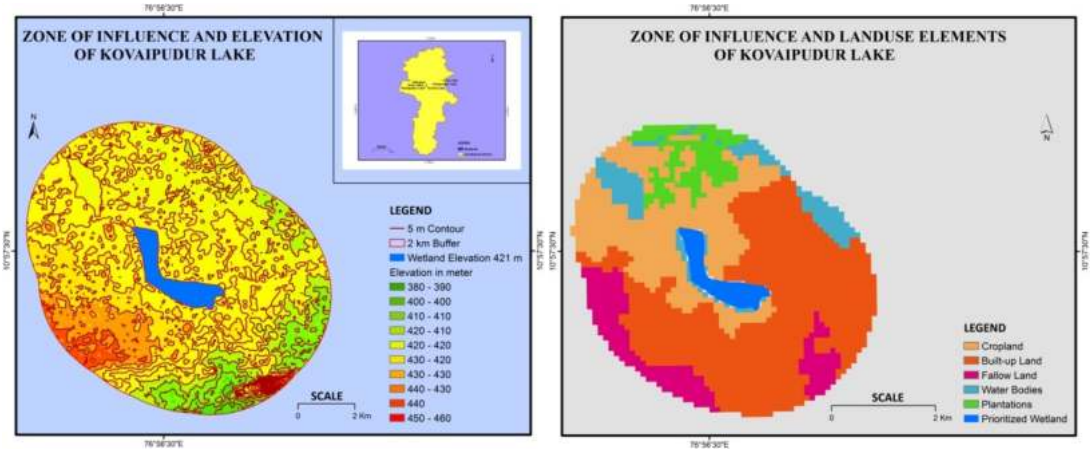
Table 4.4i: List of Mammals recorded along the Kovaipudur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Horse | *Equus ferus caballus* | Equidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 4.2: Comparative Google imagery for Kovaipudur Lake**




**Map 4.3: The zone of influence around the KovaipudurLake**



**Kurichi Kulam**

**Lake Survey Number:** 206

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Kuruchikulam (Plate 6).

1.2 Villages that surround the wetland include Athupalam, Kuniyamuthur, Kurichi and Macchampalayam.

1.3 & 1.4 The lake is based in Madukarai taluk in Coimbatore District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 58'11.1" N; 10° 58'12.3" N; 10° 58'18.8" N; 10° 58'20.9" N; 10° 57'46.5" N; and Longitude: 076° 57'25.3" E; 076° 57'28.3" E; 077° 57'33.7" E; 077° 57'44.1" E; 077° 58'14.4" E;

1.6 The wetland is not a Protected Area and is under the jurisdiction of PWD Tamil Nadu.

1.7 The wetland comes under the jurisdiction of PWD.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 132 hectares (Map 4.4).

2.2 The Wetland type - the wetlands in belong to the Natural (inland) category in the sub category permanent lakes.

2.3 Based on the secondary information the average depth is 2 to 2.5 meters for the wetland.

2.4 The elevation of the wetland is 406 to 413 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area, Shiruvani hills and the Noyyal River.
b) The water in the wetland is of permanent nature with some water is present throughout the year.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the Noyyal River and adjoining agriculture fields.
d) The pH of the water was 8.9
e) The lake has fresh water as Salinity was 177 ppt.
f) The wetland was partially dry and *Ipomoea sp.*, *Eichornea crassipes, Typha anguistofolia* and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of September, 2018 in Coimbatore was 15.1 mm
b) The atmospheric temperature was 29°C and the humidity was 41 %

2.7 The area of zone of influence is 2184.31 hectares with a fixed buffer area of 2 kms around the wetland (Map 4.5).

2.8 The major land use around the wetland comprised of

Agricultural lands 10 %; Urban Settlements 85%;
Grassland 0%; Industrial 05 %.

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 4.4 & 4.5.

**Section III- Biodiversity**

3.1 List of Plant species: 46 species of plants were recorded around the wetland during our visit (Table 4.5).

3.2 List of animal species: 91 animal species including 5 domestic species were recorded during the survey (Table 4.5 a-g)

3.3 Species of Conservation importance: Four Threatened species of birds were observed during the survey (Table 4.5 a-g)

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes, Typha angustifolia* formed major part of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the borewell water and Athikadavu and Shiruvani water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The are few farmlands where agriculture is undertaken around the wetland using borewell water.
4.3 Fishery is undertaken and PWD gives annual tenders.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is minimal runoff form the surrounding area as it is a water deficient area.
4.10 The wetland has a many temples along its bank and major cultural and religious activities are performed in the wetland when water is present.
4.11 The site is used majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is commercial fishery.
4.15 Around the wetland we observed encroachment and excessive solid waste dumping.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 There is agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture or fishery purpose.
5.6 The wetland has faced drought for the past few years due to the lack of rains.
5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow due to depleting water in the wetland.
6.2 The wetland has been facing drought condition for the past 3 years.
6.3 Idol immersion is a major problem along with solid waste dumping.

**Section VII Notification Category**

The wetland is not under the Smart City program and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Solid waste dumping is leading to the change in the wetland character.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Kurichi Lake

District Environmental Profile for Eco Sensitive Areas in Tamil Nadu - Western Region (Coimbatore, Tiruppur, Karur and Erode) (2015) ENVIS Centre, Department of Environment, Government of Tamil Nadu.

Janaranjani M., Varunprasath K., Lekshmi Priya R., Sutharsan L. and Lakeshmanaswamy M. (2017) Status of Wetlands in the Coimbatore District, Tamilnadu, India. *Asian Journal of Environment & Ecology*, 4(4): 1-12.

Jenela Priscy J., Jesvin Shobini S. and Reya Issac (2017) Heavy Metal Pollution in Wetlands around Coimbatore. *International Journal of ChemTech Research*. 10(10), 119-128.

Mohanraj R., Sathishkumar M., Azeez P. A. and Sivakumar R. (2000) Pollution Status of Wetlands in Urban Coimbatore, Tamilnadu, India. *Bull. Environ. Contam.Toxicol.* 64:638-643.

Nishadh K. A., Chandra R. and Azeez, P. (2010) A Pollution Status and Conservation of Lakes in Coimbatore, Tamil Nadu, India. SÁCON, Coimbatore, Tamil Nadu.

Pragatheesh A. and Pushp Jain (2013) Environmental Degradation of the Coimbatore Wetlands in the Noyyal River Basin. EIA Resource and Response Centre (ERC), Kotagiri, Nilgiri, India.

Special Correspondent (Jul. 23, 2017) Kurichi lake to get a fresh lease of life.

CNS Nature (Sep. 09, 2018) Vijaykumar Krishnamurthy (Sep. 09, 2018) ebird Checklist (ebird.org/pa/hotspot/L3982249?yr=all&m=&rank=mrec)

Table4.5: List of Plant species recorded along the Kurichi Kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 6 | *Muntingia calabura* | Jamaica Cherry | Thenpazham | Muntingiaceae | Exotic | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 10 | *Caesalpinia pulcherrima* | Peacock Flower, Pride of Barbados, Dwarf poinciana | Mayurkonrai | Fabaceae | Native | |
| 11 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 12 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 13 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 14 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 15 | *Senna tora* | Stinking Cassia, Chinese senna, Foetid cassia,Java bean, Low senna,Peanut weed, Sickle senna, Sicklepod | Senavu | Fabaceae | Native | NA |
| 16 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 17 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 18 | *Terminalia catappa* | Indian Almond | Nattuvadumai, Vadumai | Combretaceae | Native | NA |
| 19 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 20 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 21 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 22 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 23 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 24 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 25 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 26 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai, Mukkuttikkodi | Nyctaginaceae | Native | NA |
| 27 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 28 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 29 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 30 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 31 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 32 | *Acalypha ciliata* | Fringed Acalypha | --- | Euphorbiaceae | Native | NA |
| 33 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 34 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 35 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 36 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 37 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 38 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 39 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 40 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 41 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 42 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 43 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 44 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 45 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 46 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.6a: List of Insect species recorded along the Kurichi Kulam

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 8 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |
| 9 | Flesh Fly | *Sarcophagidae* | Sarcophagidae |

Table 4.6b: List of Butterfly species recorded along the Kurichi Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 7 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 8 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 12 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 13 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 14 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 15 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 16 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 4.6c: List of Odonata species recorded along the Kurichi Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

| | | | | |
|---|---|---|---|---|
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 4.6d: List of Fish species recorded form the Kurichi Kulam

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.6e: List of Reptile species recorded along the Kurichi Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 4.6f: List of Bird species recorded along the Kurichi Kulam

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 4 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 5 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 8 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 12 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 13 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 14 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 15 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 16 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 17 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 18 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 19 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 20 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 21 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 22 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 23 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 24 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 25 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 26 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 27 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 28 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 29 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 30 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 31 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 32 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 33 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 34 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 35 | Oriental Magpie Robin | *Copsychus saularis* | Muscicapidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 36 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 37 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 38 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 39 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

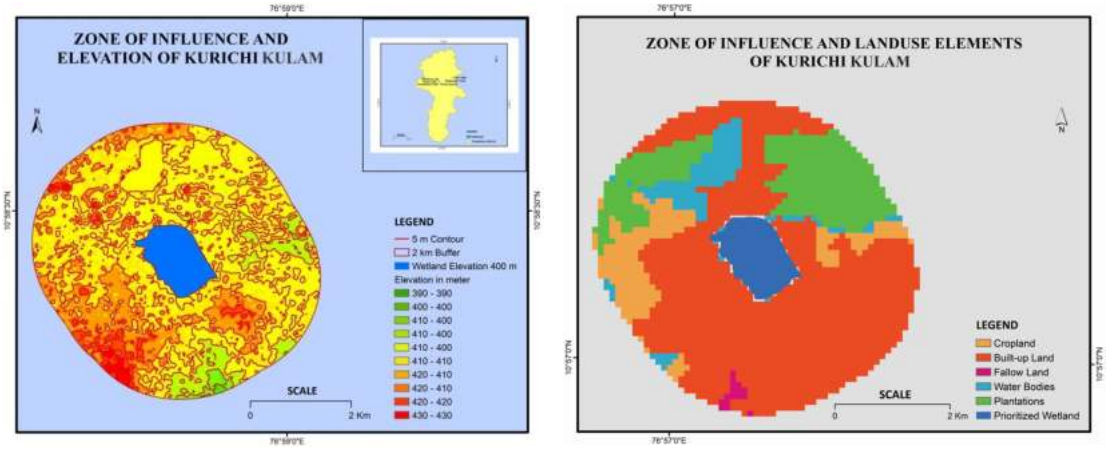
Table 4.6g: List of Mammal species recorded along the Kurichi Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Pig | *Sus domesticus* | Suidae | Domestic |
| 6 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 4.4: Comparative Google imagery for Kurichi Kulam**




**Map 4.5: The zone of influence around the Kurichi Kulam**



**Perur Lake**

Perur Lake (Latitude 10° 58'09.9"N and Longitude 076° 55'51.0"E) is situated near the village Perur. This lake spreads across 107.161 hectares, with the catchment area of 2.227 sq.km of free and 2.586 sq.km of combined area. The full tank level is 14.8 m. The wetland is surrounded by agricultural lands, villages and roads.

**Lake Survey Number:** 154/1, 131

**Section I ; Identification, Location and Jurisdiction**

1.1 Perur Lake also known as Perur Chettipalayam lake (Plate 7).
1.2 Villages that surround the wetland include Perur, Sengulkalavai, Puthunvicky and Erimedu. These villages come under Coimbatore South Thesil.
1.3 & 1.4 The lake is based in Coimbatore District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 10° 58'09.9" N; 10° 58'30.4" N and Longitude: 076°55'51.0" E; 076° 55'26.7" E
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of Municipal Corporation of Coimbatore city since 2015.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 82.6 hectares (Map 4.6).
2.2 The Wetland type - the wetlands in Coimbatore belong to the Human Made category in the sub category Tanks.
2.3 Based on the secondary information the average depth is 2 meters for the wetland.
2.4 The elevation of the wetland is 411 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, the overflow form the Noyyal River and the surrounding runoff form the catchment area.
   b) The water in the wetland is of interminent nature with seasonal drying bouts, as the wetland is mostly dependant on the rainfall and runoff waters.
   c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater.
   d) The pH of the water was observed to be acidic and recorded at 6.5.
   e) The lake has fresh water with a salinity of 0.425 ppt recorded at the time of sampling.
   f) The wetland was observed to be oligotrophic as the wetland was clear of all the macrophytes. The wetland has undergone clearing up of silt during the summer months.
2.6 Climatic setting
   a) Rainfall for the month of November in Coimbatore was 7 cm.
   b) The atmospheric temperature varied between 23 and 31 °C and the humidity was 88%
2.7 The area of zone of influence around the wetland is 2057.41 hectares with a fixed buffer area of 2 kms around the wetland (Map 4.7).
2.8 The major land use around the wetland comprised of 90% agriculture, 10% Rural human settlements.
2.9. The comparison of the wetland for the years 2006 and 2017 is given in Map 4.6 & 4.7.

**Section III- Biodiversity**

3.1 List of Plant species: 52 species of plants were recorded around the wetland during our visit. (Table 4.7)
3.2 List of animal species: 46 animal species including 3 domestic species were recorded during the survey (Table 4.8a-h)
3.3 Species of Conservation importance: One near Threatened species of bird and fish and one vulnerable fish species was observed during the survey (Table 4.8a-h)
3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Accacia nilotica indica*, *Ipomoea sp.* formed nearly 10 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: none were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the Shiruvani reservoir as well as borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is a major activity around and within the wetland.
4.3 Fishery is a alternative seasonal livelihood option in the wetland.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and due to agriculture the wetland acts as a sink for sediments.
4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site is only majorly used by bird enthusiast but there are no other boating or recreational activities in the wetland.
4.12 The wetland is used for agriculture, shorgum and banana plantation forms one of the major produce at the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a small proportion of fishery that is basically seasonal.
4.15 Around the wetland we observed minor encroachment and solid waste dumping. The wetland is also mined for silt that is deposited during the rainfall.

**Section V Pre-existing rights and privileges**

5.1 No Community fishing is undertaken, the fish is mainly seasonal forms a small part of the wetlands service. There has been no assessment of the local or endemic fishery.
5.2 Banana Plantation is undertaken within the wetlands without the permission form the municipality.
5.3 Agriculture is the main practice within and around the wetland.
5.4 Grazing by the cattle and goats is undertaken.
5.5 There is withdrawal of water for agriculture purpose.
5.6 There was no sign of boats or bathing by human or livestalk observed at the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing development activities along the wetland as well as the Noyyal River.
6.2 Though low in the present status, the pollution in the form of sewage, effluents and solid waste dumping is also an increasing threat to the bird habitat.
6.3 The interior regions of the wetland are used for agriculture and plantation that can adversely affect the habitat.
6.4 There is an increase in the invasive plant species that is changing the habitat of the wetland.
6.5 The wetland is used for cultural and religious practices including the immersion of idols that impact the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form reclamation and encroachment, siltation and solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There is agriculture and plantation that are currently being undertaken, however these activities should remain limited as it can affect the water holding potential of the wetland apart form it providing habitat to the birds. Building of bunds along the wetlands should be scientifically planned.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

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Table 4.7: List of Plants recorded along the Perur Lake

| S. No | Scientific Name | Common English Name | Local Hindi Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Portulaca oleracea* | Indian Parseland | Paruppu keerai, Pulikkeerai | Portulacaceae | Native | NA |
| 4 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattu kasturi | Malvaceae | Native | NA |
| 5 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 6 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 7 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 8 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 11 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 12 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 13 | *Indigofera linifolia* | Narrowleaf Indigo | Iraththina Maalai | Fabaceae | Native | LC |
| 14 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 15 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 16 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 17 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 18 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 19 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 20 | *Cucumis dipsaceus* | Hedgehog Cucumber | | Cucurbitaceae | Exotic | NA |
| 21 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 22 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 23 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 24 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 25 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 26 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 27 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 28 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 29 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 30 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 31 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 32 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 33 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 34 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 35 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 36 | *Sesamum indicum* | Sesame | Citrrel, Ellu, Tilam | Pedaliaceae | Native | NA |
| 37 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 38 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 39 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 40 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 41 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 42 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 43 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 44 | *Jatropha tanjorensis* | Tanjore jatropha | | Euphorbiaceae | Native | NA |
| 45 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 46 | *Musa paradisiaca* | Banana Plant | Vaazhaimaram | Musaceae | Native | NA |
| 47 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 48 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 49 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 50 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 51 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |
| 52 | *Accacia nilotica indica* | | | | | |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 4.8a: List of Insects recorded along the Perur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |

Table 4.8b: List of Butterflies recorded along the Perur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 3 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 4.8c: List of Dragonflies recorded along the Perur Wetland

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 4.8d: List of Arachnida recorded along the Perur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 4.8e: List of Fishes recorded form the Perur Wetland

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 10 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 11 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 12 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 13 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 4.8f: List of Reptiles recorded along the Perur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 4.8g: List of Birds recorded along the Perur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 8 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 9 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 10 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 11 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 12 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 13 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 14 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 15 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 16 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 17 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 18 | Yellow Wagtail | *Motacilla flava* | Motacillidae | Least Concern |

Table 4.8h: List of Mammals recorded along the Perur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

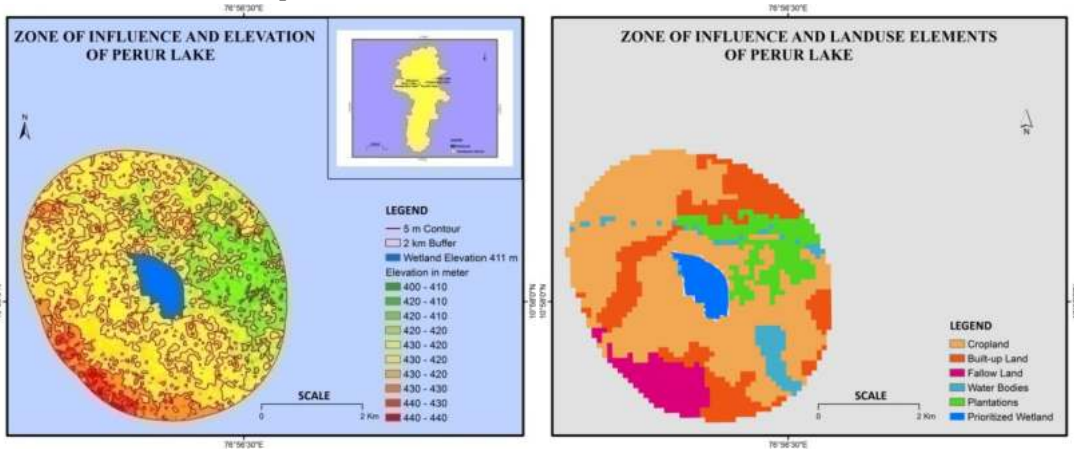
**Map 4.6: Comparative Google imagery for Perur Lake**







**Map 4.7: The zone of influence around the Perur Lake**



**Singanallur Tank**

Singanallur lake (Latitude 10° 59'53.5.1"N and Longitude 077° 01'10.2"E). It is one of the biggest lakes in Coimbatore situated on the Coimbatore – Singanallur road. It has a catchment area of 1178 hectares with the current lake bed area of 66.773 hectares and a water storage capacity of 30 Mcft. The length of the bund on the lake extends to 3102 m. It has 3 major inlets one form River Noyyal and two sewage drains form Sanganur and Kalimadai, one wier dam and two sluices act as outlets for the lake. A railway track connecting Podanur and Irugur passes through this lake. It is surrounded by agricultural and residential areas on the eastern, southern and western side of the lake.

**Lake Survey Number:** 417, 418.

**Section I ; Identification, Location and Jurisdiction**

1.1 Singanallur Lake is among the popular lakes of Coimbatore (Plate 7).

1.2 Villages that surround the wetland include Vellalore, Kallimadai, Revati mills housing. These villages come under Coimbatore South Thesil.

1.3 & 1.4 The lake is based in Coimbatore District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 59'53.5.1" N; 10° 59'44.4" N and Longitude: 077° 01'10.2" E; 077° 01'23.9" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of Municipal Corporation of Coimbatore city since 2015.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 101 hectares (Map 4.8).

2.2 The Wetland type - the wetlands in Coimbatore belong to the Human Made category in the sub category Tanks.

2.3 Based on the secondary information the average depth is 4.25 meters for the wetland.

2.4 The elevation of the wetland is 362 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the overflow form the Noyyal River and the surrounding runoff form the catchment area.
b) The water in the wetland is of permanent nature.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater.
d) The pH of the water was observed to be acidic and recorded below 7.4.
e) The lake has fresh water with salinity of 0.604 ppt at the time of sampling.
f) The wetland was observed to be mesotrophic as the wetland has almost 50 % of macrophytes. The wetland receives domestic sewage form the surrounding villages as well as some quantity of industrial effluents.

2.6 Climatic setting

a) Rainfall for the month of November in Coimbatore was 7 cm.
b) The atmospheric temperature varied between 21 and 32 °C and the humidity was 87%.

2.7 The area of zone of influence around the wetland is 2107.64 hectares with a fixed buffer area of 2 kms around the wetland (Map 4.9).

2.8 The major land use around the wetland comprised of 50% agriculture, 30% Rural human settlements 10% new constructions and 10% Industries.

2.9. The comparison of the wetland for the years 2006 and 2017 is given in Map 4.8 & 4.9.

**Section III- Biodiversity**

3.1 List of Plant species: 45 species of plants were recorded around the wetland during our visit. (Table 4.9).

3.2 List of animal species: 112 animal species were recorded during the survey (Table 4.10a-h).

3.3 Species of Conservation importance: Three near Threatened and one Vulnerable species of birds and fish were observed during the survey (Table 4.10 a-h).

3.4 Major Plant invasive alien species and extent of invasion: 11 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornia crassipes, Ipomoea sp*. formed nearly 70 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: none were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose due to sewage and effluent contamination. The municipal corporation provides drinking water form the Shiruvani reservoir as well as borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is a major activity around the wetland however, the water used is mostly form the ground water.

4.3 Fishery is a major livelihood option in the wetland and fishing is done on the basis of tender through a society allowed by the municipal corporation. The fish seed is introduced and mostly comprises of the common carps.

4.4 The wetland is not used for any aquatic food plant cultivation

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is frequented by nature enthusiast for bird watching and regulated boating.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area, the wetland acts a s a sink for sediments.

4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is majorly used by bird enthusiast and there is also boating activities in the wetland.

4.12 The wetland is used for agriculture, Coconut and Banana plantation forms one of the major produce at the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports fishery that is basically the cultured edible fish.

4.15 Around the wetland we observed encroachment and solid waste dumping. But there was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken with permission/ lease form the local municipality, the fish is mainly introduced and there has been no assessment of the local or endemic fishery.

5.2 Banana Plantation is undertaken around the wetlands.

5.3 Agriculture is the main practice around the wetland.

5.4 Grazing by the cattle is undertaken around the wetlands.

5.5 There is withdrawal of water for agriculture or fishery purpose.

5.6 There were signs of boats or bathing by human or livestock observed at the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is also an increasing threat to the bird habitat.

6.3 The surrounding of the wetland is excessively used for agriculture and plantation that can adversely affect the habitat.

6.4 There is an increase in the invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level. There are local bodies and NGO's involved in the conservation of the wetland.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form reclamation and encroachment, solid waste dumping. There are existing human habitations and industries that are releasing sewage and effluents that are detrimental to the ecosystem as the wetland is becoming a sink for the waste released into the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The discharge of effluents and sewage should be regulated. Moreover , there is agriculture, plantation and fishery activities that are currently being undertaken, however these activities should remain limited as it can affect the water holding potential of the wetland apart form it providing habitat to the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

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Table 4.9: List of Plants recorded along the Singanallur Tank

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 3 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 4 | *Muntingia calabura* | Jamaica Cherry | Thenpazham | Muntingiaceae | Exotic | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Abrus precatorius* | Crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 10 | *Bauhinia purpurea* | Purple orchid tree | Nilattiruvatti | Fabaceae | Native | LC |
| 11 | *Delonix regia* | Flame Tree | | Fabaceae | Invasive | LC |
| 12 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Senna occidentalis* | Coffee senna | Nattamtakarai, Payaverai | Fabaceae | Native | NA |
| 15 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 16 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 17 | *Terminalia arjuna* | Arjun | Marudhu | Combretaceae | Native | NA |
| 18 | *Turnera subulata* | White Alder | | Turneraceae | Invasive | NA |
| 19 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 20 | *Carica papaya* | Papaya Tree | Papali maram | Caricaceae | Native | DD |
| 21 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 22 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 23 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 24 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 25 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 26 | *Asclepias curassavica* | Scarlet Milkweed, Bloodflower, Silkweed, Indian root | | Apocynaceae | Naturalized | |
| 27 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 28 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 29 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 30 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 31 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 32 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 33 | *Pedalium murex* | Large caltrops | Yanai nerunji, Perunerunji | Pedaliaceae | Native | NA |
| 34 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 35 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 36 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 37 | *Amaranthus spinosus* | Prickly Amaranth | Mullukkeerai | Amaranthaceae | Exotic | NA |
| 38 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 39 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 40 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 41 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 42 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 43 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 44 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 45 | *Accacia nilotica indica* | | | | | |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.10a: List of Insects recorded along the Singanallur Tank

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Short horned Grasshopper | *Acrida exaltata* | Acrididae |
| 4 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 5 | Water Strider | *Gerris sp.* | Gerridae |
| 6 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 7 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 8 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 9 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 10 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 4.10b: List of Butterflies recorded along the Singanallur Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 5 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 6 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 7 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 8 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |

| | | | | |
|---|---|---|---|---|
| 9 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 10 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 11 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 12 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 13 | Psyche | *Leptosia nina* | Pierinae | Common |
| 14 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 15 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 16 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 17 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 18 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 19 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 20 | Common Crow | *Euploea core* | Danainae | Common |
| 21 | Common Evening Brown | *Melanitis leda* | Satyrinae | Common |
| 22 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 23 | Common Sailer | *Neptis hylas* | Limenitinae | Common |
| 24 | Common Baron | *Euthalia aconthea* | Limenitinae | Common |
| 25 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 26 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 27 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 28 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |
| 29 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 30 | Great Eggfly | *Hypolimnas bolina* | Nymphalinae | Common |
| 31 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 4.10c: List of Dragonflies recorded along the Singanallur Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 4.10dc: List of Arachnida recorded along the Singanallur Tank

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 4.10e: List of Fishes recorded form the Singanallur Tank

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 9 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 10 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 11 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 13 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 14 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 15 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.10f: List of Reptiles recorded along the Singanallur Tank

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 3 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

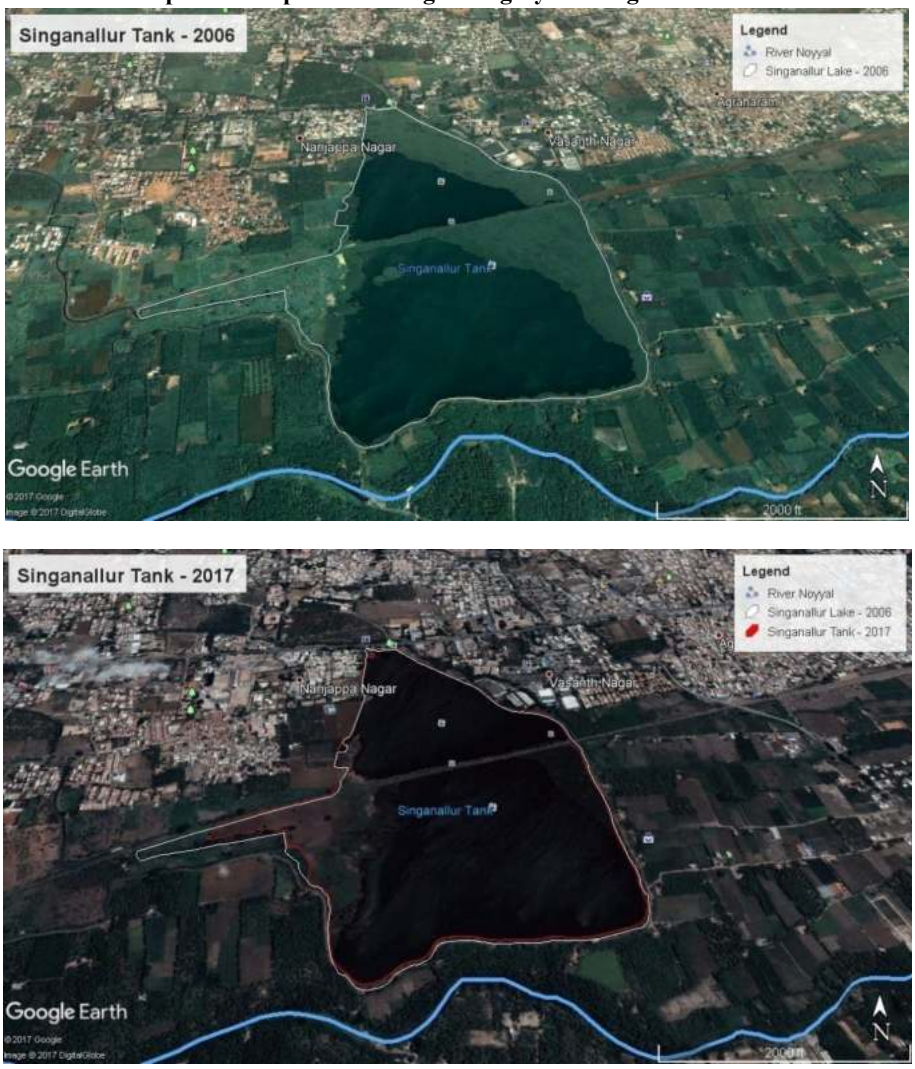
Table 4.10g: List of Birds recorded along the Singanalur Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 4 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 5 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 6 | Woolly-necked Stork | *Ciconia episcopus* | Ciconiidae | Vulnerable |
| 7 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 8 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 9 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 10 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 11 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 12 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 13 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 14 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 15 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 16 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 17 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 18 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 19 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 20 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 21 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 22 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 23 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 24 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 25 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 26 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 27 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 28 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 29 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 30 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 31 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 32 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 33 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 34 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 35 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 36 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 37 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 38 | Baya Weaver | *Ploceus philippinus* | Ploceidae | Least Concern |
| 39 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 40 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

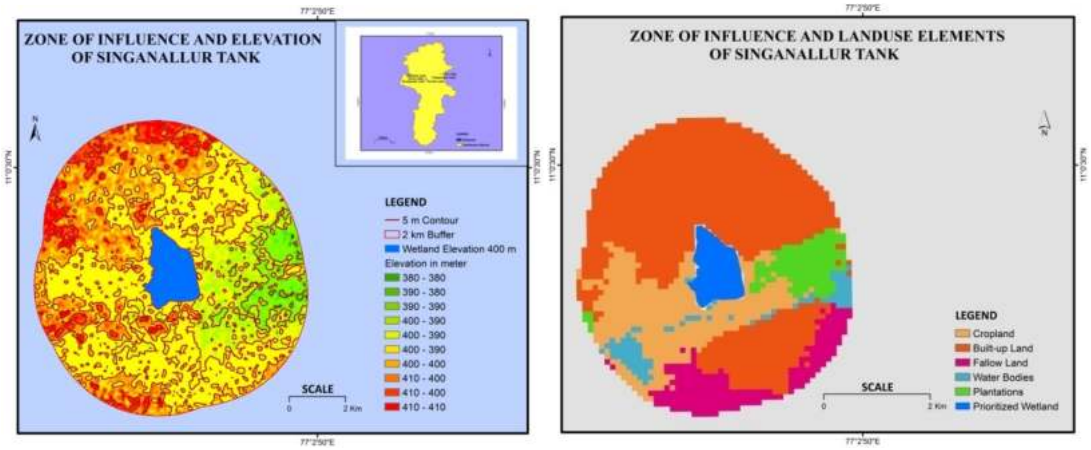
Table 4.10h: List of Mammals recorded along the Singanalur Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 4.8: Comparative Google imagery for Singanallur Tank**




**Map 4.9: The zone of influence around the Singanallur Tank**



**Sulur Lake**

Sulur lake (Latitude: 11° 02'04.5" N and Longitude: 077° 07'38.9" E) is situated in the suburban Coimbatore. They comprise of two adjoining wetlands namely the big and small lake.
It has a total catchment area of 8822 hectares and a water storage capacity of 32.21 Mcft. The length of the bund on the lake extends to 1560 m. The wetlands receive water form the Noyyal River and has three outlets. The major concerns include the solidwaste dumping apart form encroachment and road construction activities.

**Lake Survey Number:** 367, 387.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Sulur Lake (Plate 8).
1.2 Villages that surround the wetland include Sulur and Ranganathapuram. This lake comes under the Sulur Thesil of Coimbatore.
1.3 & 1.4 The Lake is based in Coimbatore District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: form 11° 02'04.5" N to 11° 01'30.8" N and Longitude form: 077°07'38.9" E to 077° 06'45.3" E
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of Municipal Corporation of Coimbatore city since 2015.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 84.3 hectares (Map 4.11).
2.2 The Wetland type - the wetlands in Coimbatore belong to the Human Made category in the sub category Tanks.
2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.
2.4 The elevation of the wetland is 340 meters (asl)
2.5 Water regimes
   a) The main source of water for the wetland is Rainfall, the overflow form the Noyyal River and the surrounding runoff form the catchment area.
   b) The water in the wetland is of interminent nature with seasonal drying bouts, as the wetland is mostly dependant on the rainfall and runoff waters.
   c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater.
   d) The pH of the water was observed to be acidic and was recorded as 7.4.
   e) The lake has fresh water with a salinity of 0.425 ppt at the time of sampling.
   f) The wetland was observed to be mesotrophic, the wetland had macrophytes. The wetland receives domestic sewage form the surrounding human habitation as well as some quantity of industrial effluents.
2.6 Climatic setting
   a) Annual Rainfall for the month of November in Coimbatore was 7 cm.
   b) The atmospheric temperature varied between 23 and 31 °C and the humidity was 88%.
2.7 The area of zone of influence around the wetland is 2398.59 hectares with a fixed buffer area of 2 kms around the wetland (Map 4.11).
2.8 The major land use around the wetland comprised of 75% agriculture, 25% Rural human settlements.
2.9. The comparison of the wetland for the years 2006 and 2017 is given in Map 4.10 & 4.11.

**Section III- Biodiversity**

3.1 List of Plant species: 112 species of plants were recorded around the wetland during our visit (Table 4.11).
3.2 List of animal species: 124 animal species including one domestic species were recorded during the survey (Table 4.12 a-h).
3.3 Species of Conservation importance: Two near Threatened species of birds were observed during the survey (Table 4.12 a-h).

3.4 Major Plant invasive alien species and extent of invasion: 14 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornia crassipes* formed nearly 40 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: none were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose due to sewage and effluent contamination. The municipal corporation provides drinking water as well as borewell water at regular intervals that is used bythe locals to fulfill their daily requirements.

4.2 Agriculture is a major activity around the wetland.

4.3 Fishery is a major livelihood option in the wetland and fishing is done on the basis of tender through a society allowed buy the municipal corporation. The fish seed is introduced and mostly comprises of the common carps.

4.4 The wetland is not used for any aquatic food plant cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is frequented by nature enthusiast for bird watching and regulated boating.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area.

4.10 The wetland has some temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is only used majorly by bird enthusiast but there is no other boating or recreational activities in the wetland on a regular basis.

4.12 The wetland is used for agriculture, Coconut and banana plantation forms one of the major produce at the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports fishery that is basically the cultured edible fish.

4.15 Around the wetland we observed encroachment and solid waste dumping.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken with permission/ lease form the local municipality, the fish is mainly introduced and there has been no assessment of the local or endemic fishery.

5.2 Coconut and Banana Plantation is undertaken within the wetland.

5.3 Agriculture is the main practice around the wetland.

5.4 There is withdrawal of water for agriculture or fishery purpose.

5.5 There were signs of boats or bathing by human or livestalk observed at the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The pollution in the form of sewage, effluents and solid waste dumping is also an increasing threat to the bird habitat.

6.3 The wetland is used for agriculture and plantation that can adversely affect the habitat.

6.4 There is an increase in the invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form reclamation and encroachment, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There is agriculture, plantation and fishery activities that are currently being undertaken, however these activities should remain limited as it can affect the water holding potential of the wetland apart form it providing habitat to the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

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Table 4.11: List of Plants recorded along the Sulur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 3 | *Capparis zeylanica* | Ceylon caper | Adondai, Konkani | Capparaceae | Native | NA |
| 4 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 5 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 6 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 7 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 8 | *Corchorus aestuans* | East Indian Mallow, Jute | | Malvaceae | Native | |
| 9 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 10 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 11 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 12 | *Ailanthus excelsa* | Indian Tree of Heaven | Agal, Perumaram | Simaroubaceae | Native | NA |
| 13 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 14 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 15 | *Albizia saman* | Rain Tree | Thoongumoonji maram | Fabaceae | Exotic | NA |
| 16 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 17 | *Delonix regia* | Flame Tree | | Fabaceae | Invasive | LC |
| 18 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 19 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 20 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 21 | *Senna tora* | Stinking Cassia, Sicklepod | Senavu | Fabaceae | Native | NA |
| 22 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 23 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 24 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 25 | *Terminalia catappa* | Indian Almond | Nattuvadumai, | Combretaceae | Native | NA |
| 26 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 27 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 28 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 29 | *Cucumis dipsaceus* | Hedgehog Cucumber | | Cucurbitaceae | Exotic | NA |
| 30 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, | Cucurbitaceae | Native | NA |
| 31 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 32 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 33 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 34 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 35 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, | Asteraceae | Native | NA |
| 36 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, | Plumbaginaceae | Native | NA |
| 37 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 38 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 39 | *Gymnema sylvestre* | Cowplant | Cirukurinchchan | Apocynaceae | Native | NA |
| 40 | *Pergularia daemia* | Pergularia | Seendhal kodi | Apocynaceae | Native | NA |
| 41 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 42 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 43 | *Ipomoea obscura* | Obscure Morning Glory | Chirutali, Sirudali | Convolvulaceae | Invasive | NA |
| 44 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 45 | *Solanum nigrum* | Black nightshade, | Manathakkali | Solanaceae | Native | NA |
| 46 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 47 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 48 | *Barleria buxifolia* | Box-Leaved Barleria | Kattimullu | Acanthaceae | Native | NA |
| 49 | *Barleria prionitis* | Porcupine Flower | Semmulli | Acanthaceae | Native | NA |
| 50 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 51 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 52 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 53 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam | Amaranthaceae | Native | NA |
| 54 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 55 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 56 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 57 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni | Euphorbiaceae | Native | NA |
| 58 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 59 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 60 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 61 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 62 | *Holoptelea integrifolia* | Indian Elm | Aaya | Ulmaceae | Native | NA |
| 63 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 64 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 65 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 66 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 67 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram | Arecaceae | Native | NA |
| 68 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, | Arecaceae | Native | NA |
| 69 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 70 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 71 | *Schoenoplectus subulatus* | Common Club-rush | | Cyperaceae | Native | NA |
| 72 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 73 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 74 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 75 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 76 | *Enteropogon dolichostachyus* | Finger grass | | Poaceae | Native | NA |
| 77 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.12a: List of Insects recorded along the Sulur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 7 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 8 | Weaver Ant | *Oecophylla smaragdina* | Formicidae |
| 9 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 10 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 11 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 12 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 4.12b: List of Butterflies recorded along the Sulur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Rice Swift | *Borbo cinnara* | Hesperiinae | Common |
| 2 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 5 | Blue Mormon | *Papilio polymnestor* | Papilioninae | Common |
| 6 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 7 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 8 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 9 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 10 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 11 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 12 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 13 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 14 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 15 | Indian Cabbage White | *Pieris canidia* | Pierinae | Common |
| 16 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 17 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 18 | Pioneer | *Belenois aurota* | Pierinae | Common |

| | | | | |
|---|---|---|---|---|
| 19 | Common Silverline | *Spindasis vulcanus* | Aphnaeinae | Common |
| 20 | Common Lineblue | *Prosotas nora* | Polyommatinae | Common |
| 21 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 22 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 23 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 24 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 25 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 26 | Common Crow | *Euploea core* | Danainae | Common |
| 27 | Dark-Brand Bushbrown | *Mycalesis mineus* | Satyrinae | Common |
| 28 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 29 | Common Baron | *Euthalia aconthea* | Limenitinae | Common |
| 30 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 31 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 32 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 33 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |
| 34 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 35 | Great Eggfly | *Hypolimnas bolina* | Nymphalinae | Common |
| 36 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 4.12c: List of Dragonflies recorded along the Sulur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 4.12d: List of Arachnida recorded along the Sulur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 4.12e: List of Fishes recorded form the Sulur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 9 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 10 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 11 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 12 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 13 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 14 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.12f: List of Reptiles recorded along the Sulur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 3 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

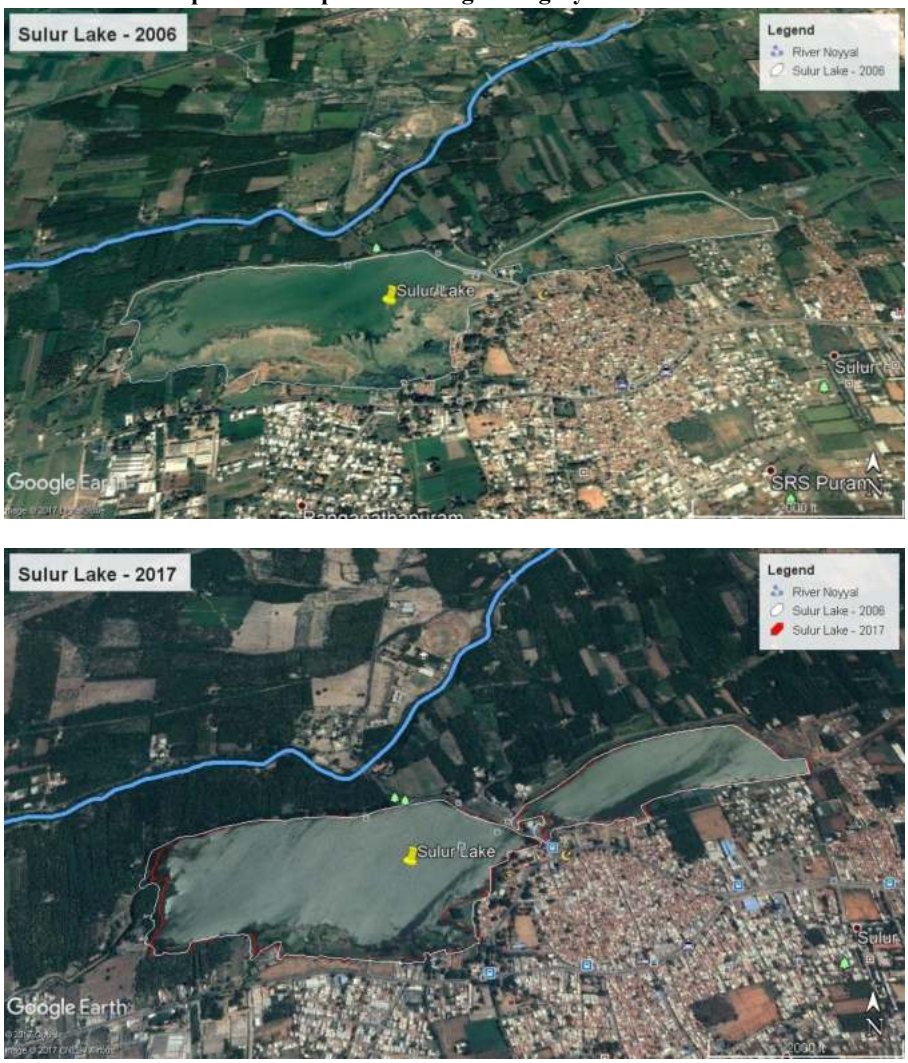
Table 4.12g: List of Birds recorded along the Sulur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 4 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 12 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 13 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 14 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 15 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 16 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 17 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 18 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 19 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 20 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 21 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 22 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 23 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 24 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 25 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 26 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 27 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 28 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 29 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 30 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 31 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 32 | Lesser Goldenback | *Dinopium benghalense* | Picidae | Least Concern |
| 33 | Indian Paradise-flycatcher | *Terpsiphone paradisi* | Monarchidae | Least Concern |
| 34 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 35 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 36 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 37 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 38 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 39 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 40 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 41 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 42 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 43 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 44 | Pale-billed Flowerpecker | *Dicaeum erythrorhynchos* | Dicaeidae | Least Concern |
| 45 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 46 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 47 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 48 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 49 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

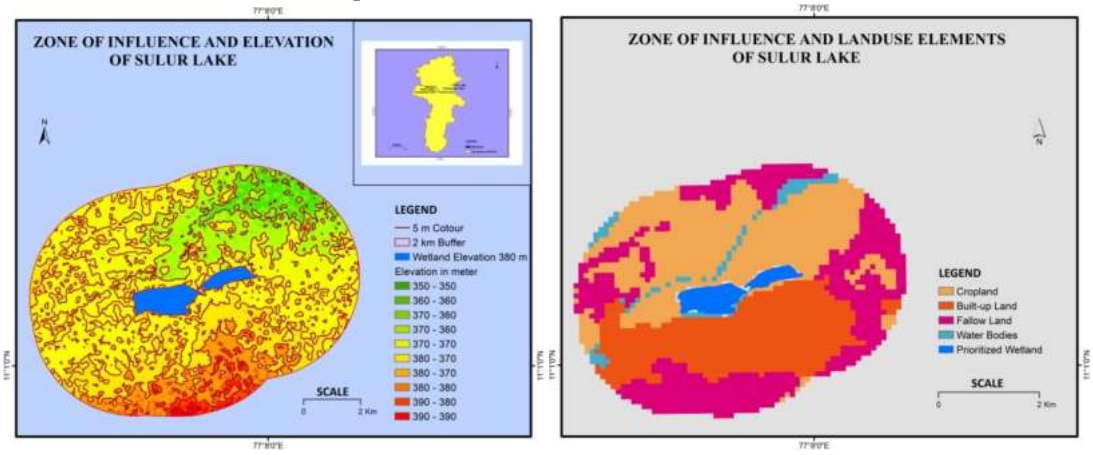
Table 4.12h: List of Mammals recorded along the Sulur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 4.10: Comparative Google imagery for Sulur Lake**




**Map 4.11: Zone of Influence at Sulur Lake**



**Ukkadam Lake**

**Lake Survey number**: Not Provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Ukkadam Periyakulam (Plate 8), also known as Periyakulam.

1.2 Villages that surround the wetland include Coimbatore city.

1.3 & 1.4 The Lake is based in Coimbatore West taluka in Coimbatore District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 59'07.8" N; 10° 59'04.8" N; 10° 58'59.0" N; 10° 58'49.0" N; and Longitude: 076° 57'08.9" E; 076° 57'00.1" E; 076° 56'55.3" E; 076° 56'48.3" E;

1.6 The wetland is not a Protected Area

1.7 The wetland comes under the jurisdiction of PWD Coimbatore division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 129 hectares (Map 4.12).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lake.

2.3 Based on the secondary information the average depth is 1.5 to 2.0 meters for the wetland.

2.4 The elevation of the wetland is 409 to 415 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and form the Noyyal River.
b) The water in the wetland is mostly of permanent nature though it shrinks in volume during summer.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was 8.91.
e) The lake has fresh water as salinity recorded was 862 ppt.

2.6 Climatic setting

a) Rainfall for the month of September in Coimbatore was 15.1 mm.
b) The atmospheric temperature was 27.8 C and the humidity was 40%.

2.7 The area of zone of influence is 2252.02 hectares with a fixed buffer area of 2 kms around the wetland (Map 4.13).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland and Scrubland 0 %; |
| Agriculture 30%, | Settlements (rural) 15%; |
| Settlements (Urban) 45%; | Industrial 10% |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 4.12 & 4.13.

**Section III- Biodiversity**

3.1 List of Plant species: 69 species of plants were recorded around the wetland during our visit (Table 4.13).

3.2 List of animal species: 88 animal species including 3 domestic species were recorded during the survey (Table 4.14 a-g).

3.3 Species of Conservation importance: Three Threatened species of birds were observed during the survey (Table 4.14 a-g).

3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plant species including *Eichhornia crassipes, Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around.
4.3 Fishery is undertaken as the wetland by giving tenders by PWD.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.7 It is a major source of ground water recharge.
4.8 There is runoff form the surrounding catchment area. There is no sand mining.
4.10 The wetland does have any several temples and other religious institutions along its bank, except for recreation minimal cultural activity is organized around the wetland.
4.11 The site is used majorly used for recreation.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and wetland bird species during our survey.
4.14 The wetland does have local diversity of fish.
4.15 There was mining for sand or silt undertaken in the past.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is no withdrawal of water for agriculture.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow, as there is insufficient water during the summers.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 The wetland has some amount of solid waste dumping and encroachment activities, there are also the High tension wires that pass through the wetland.

**Section VII Notification Category**

The wetland is included in Smart Cities program and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chandl should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Ukkadam lake**

Chandra R., Nishadh K. A. and Azeez P. A. (2010) Monitoring water quality of Coimbatore wetlands, Tamil Nadu, India. *Environ Monit Assess.* 169: 671–676.

Ezhili N., Manikandan R. and Ilangovan R. (2013) Diversity and Seasonal Variation of Zooplankton in Ukkadam Lake, Coimbatore, Tamil Nadu, India. *International Journal of Current Research.* 5(8), 2091-2094.

Goldin Quadros, Hemambika B., Julffia Begam and Azeez P.A. (2014) Lakes of Coimbatore City, ENVIS Publication. pp 43.

Hemambika B., Julffia Begam A., Kirubhanandhini, V., Babu S., Mahendiran M. and Goldin Quadros (2014) Diversity of birds form the urban wetlands of Coimbatore, Tamil Nadu, India. In: Proceedings of the

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Priyatharasini P. and Dhanalakshmi B. (2016) Piscine diversity of Coimbatore wetlands, Tamilnadu, India. *International Journal of Fisheries and Aquatic Studies* 4(4): 280-285.

Gaja Mohanraj (Sep. 25, 2018) Panchapakesan Jeganathan (Aug. 18, 2018) ebirds Checklist (ebird.org/pa/ hotspot/L2609357?yr=all&m=&rank=mrec

Table 4.13: List of Plant species recorded along the Ukkadam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Capparis grandis* | Tree Caper, Grand Caper | Thotti maram | Capparaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Ceiba pentandra* | Kapok, Ceiba, | | Malvaceae | Naturalized | LC |
| 4 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 5 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 6 | *Triumfetta rhomboidea* | Burr bush,Parakeet bur | Kapotam,Ketakam | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Biophytum sensitivum* | Sensitive plant, Sikerpud | Tintanali | Oxalidaceae | Native | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 11 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 12 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 13 | *Albizia saman* | Rain Tree | Thoongumoonji maram | Fabaceae | Exotic | NA |
| 14 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 15 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 16 | *Crotalaria globosa* | Spherical Rattlepod | | Fabaceae | Native | |
| 17 | *Indigofera prostrata* | Three leaf indigo | | Fabaceae | Native | NA |
| 18 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 19 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 20 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 21 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 22 | *Sesbania grandiflora* | Agati | Sevvagatti, muni | Fabaceae | Native | NA |
| 23 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 24 | *Terminalia catappa* | Indian Almond | Nattuvadumai | Combretaceae | Native | NA |
| 25 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 26 | *Citrullus colocynthis* | Bitter Apple, Colocynth, | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 27 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 28 | *Cucumis dipsaceus* | Hedgehog Cucumber | | Cucurbitaceae | Exotic | NA |
| 29 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 30 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 31 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 32 | *Oldenlandia umbellata* | Chay Root, Indian madder, | Chayam, Chayaver, | Rubiaceae | Native | |
| 33 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 34 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 35 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 36 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 37 | *Marsdenia volubilis* | Sneeze Wort, | Kotippalai | Apocynaceae | Native | NA |
| 38 | *Wrightia tinctoria* | Sweet indrajao, | Paalai | Apocynaceae | Native | LC |
| 39 | *Evolvulus alsinoides* | Dwarf morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 40 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 41 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 42 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 43 | *Solanum nigrum* | Black nightshade | Manathakkali | Solanaceae | Native | NA |
| 44 | *Pedalium murex* | Large caltrops | Yanai nerunji, | Pedaliaceae | Native | NA |
| 45 | *Barleria buxifolia* | Box-Leaved Barleria | Rosmullippuntu | Acanthaceae | Native | NA |
| 46 | *Barleria prionitis* | Porcupine Flower | Semmulli, Korantam | Acanthaceae | Native | NA |
| 47 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 48 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 49 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 50 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 51 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 52 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 53 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 54 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 55 | *Santalum album* | Sandalwood | Chandanam | Santalaceae | Native | VU |
| 56 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 57 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 58 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 59 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 60 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 61 | *Phoenix sylvestris* | Wild Date Palm | Echam plum | Arecaceae | Native | NA |
| 62 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 63 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 64 | *Cyperus dubius* | White Water Sedge | Veluttha nirbasi | Cyperaceae | Native | LC |
| 65 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 66 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 67 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 68 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 69 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.14a: List of Insect species recorded along the Ukkadam Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 4 | Antlion | *Myrmele ontidae* | Myrmeleontidae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 9 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 4.14b: List of Butterfly species recorded along the Ukkadam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 7 | Dark Grass Blue | *Zizeeria karsandra* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 11 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 12 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 13 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 14 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 15 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 4.14c: List of Odonata species recorded along the Ukkadam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 7 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 8 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 4.14d: List of Fish species recorded along the Ukkadam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 12 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 4.13e: List of Reptile species recorded along the Ukkadam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

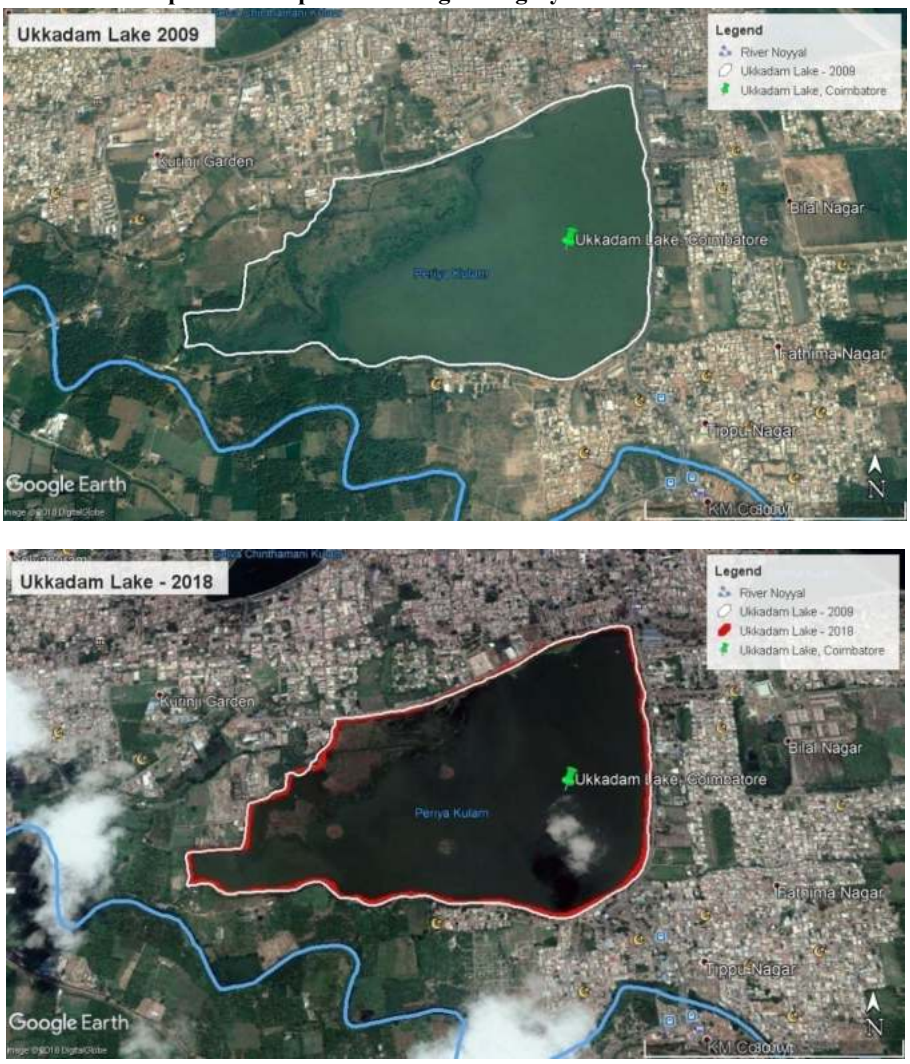
Table 4.14f: List of Bird species recorded along the Ukkadam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 4 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 9 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 10 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 11 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 12 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 13 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 14 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 15 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 16 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 17 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 18 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 19 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 20 | Little Ringed Plover | *Charadrisu dubius* | Charadriidae | Least Concern |
| 21 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 22 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 23 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 24 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 25 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 26 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 27 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 28 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 29 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 30 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 31 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 32 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 33 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 34 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 35 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 36 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 37 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 38 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

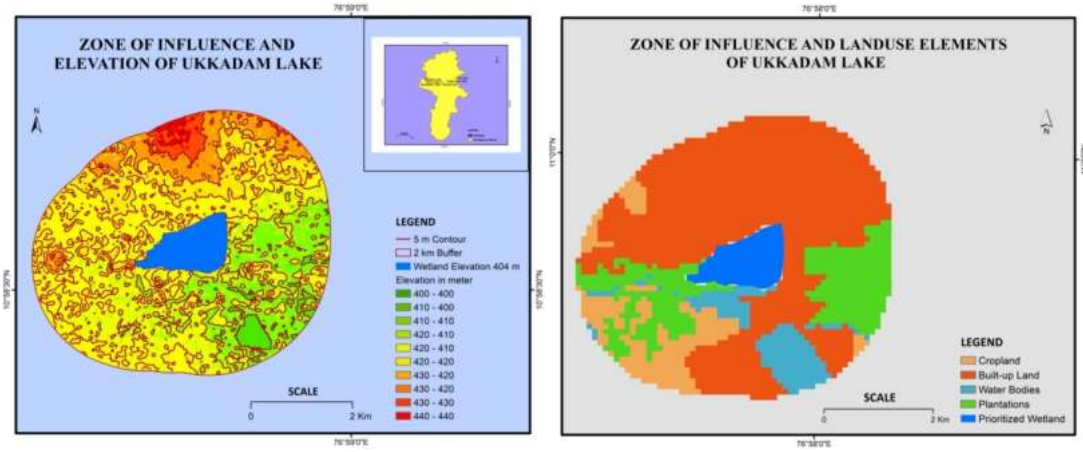
Table 4.14g: List of Mammal species recorded along the Ukkadam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 4.12: Comparative Google imagery for Ukkadam Lake**




**Map 4.13: The zone of influence around the Ukkadam Lake**



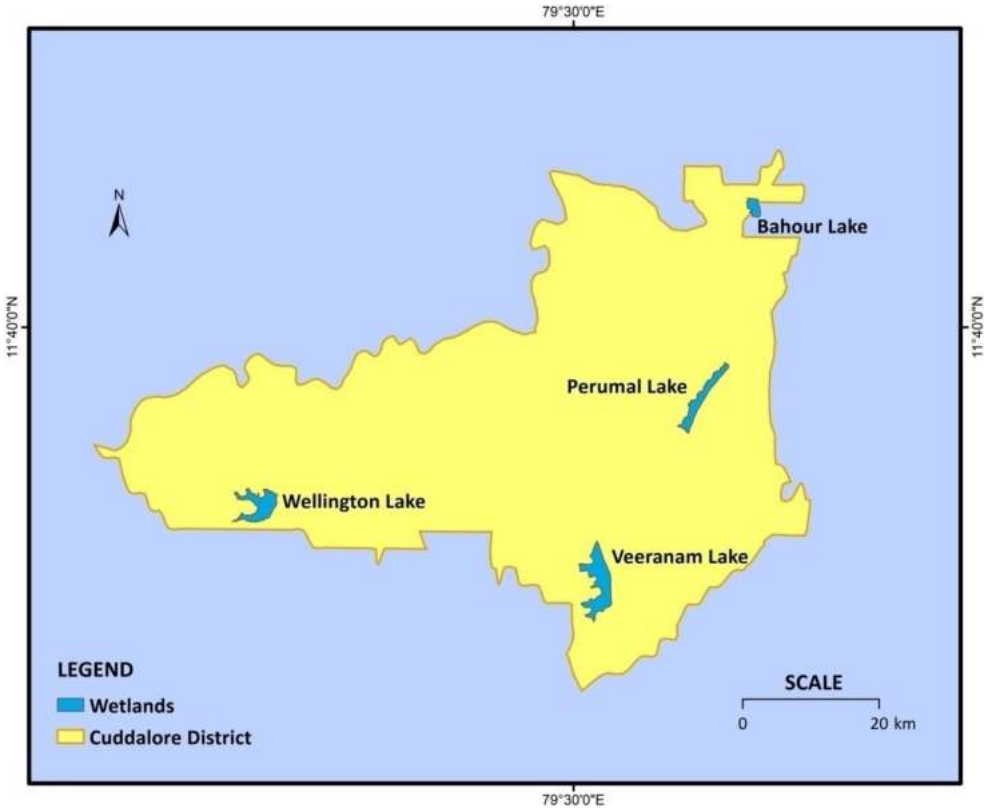
## Cuddalore District

### 1. Introduction

Cuddalore District is predominately an agricultural district with coastal line stretching form Pondicherry Union Territory in the North to the mouth of the River Coleroon in the South. District is having coastal line of 68 kms. The district is bounded on the north by Viluppuram District, on the east by the Bay of Bengal, on the south by Nagapattinam District, and on the west by Perambalur District.

Total geographic area of Cuddalore is 3678 km². Total area under wetland is 28135 ha, which includes 472 small wetland (<2.25 ha). Lanks/Ponds occupies 22.25 % of wetland area. The other wetland types are; River/Stream (8810 ha), Aquaculture ponds (1824 ha), Reservoirs (1612 ha), Salt marsh (1425 ha) and Mangroves (590 ha).

SACON during 2004 had prioritized two wetlands form Cuddalore district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these two wetlands to assess its present potential for conservation (Map 5.1). In addition, during the second phase two more wetlands were selected on the basis of available literature, google imagery and data on the internet portals.




**Map 5.1: Wetlands of Cuddalore District Assessed for Prioritization**

### Observations

Of the four wetlands selected in the district, Veeranam is the largest while Bahour is the smallest of the four wetlands. Around the four wetlands, we recorded 110 plant species both aquatic and terrestrial including 18 invasive species (Table 5.1). The faunal components totaled 117 species with the representation of 52 bird species including the wetland birds. The field study revealed that Bahour Lake was Eutrophic while the Veeranam and Perumal wetlands were Mesotrophic in status, Wellington was Oligotrophic (Table 5.2). The water and soil was not accessible at Bahour lake, hence we are unable to discuss more on the water and soil

quality. Although Wellington Lake shows oligotrophic status, the water quality was comparatively better in the Veeranam and Perumal lakes, this could be due to the presence of salts as was reflected in the lesser elements data.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Elandaikudam wetland. Mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Bahour Lake
2. Wellington Lake
3. Perumal Lake
4. Veeranam Lake

Table 5.1: The flora and fauna recorded form the wetlands of Cuddalore District

| S. No | Name of the Wetland | Plants (invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Veeranam Tank | 37 (6) | 6 | 6 | 9 | 1 | 13 | 0 | 3 | 26 | 5 |
| 2 | Bahour Lake | 59 (14) | 5 | 10 | 9 | 2 | 13 | 0 | 2 | 21 | 4 |
| 3 | Wellington Lake | 33 (5) | 6 | 3 | 5 | 1 | 4 | 0 | 1 | 20 | 3 |
| 4 | Perumal Lake | 39 (11) | 4 | 4 | 5 | 0 | 6 | 0 | 1 | 24 | 5 |
| | Total | 110 (18) | 14 | 11 | 16 | 2 | 13 | 0 | 3 | 52 | 6 |

Table 5.2: The water and soil quality assessed form the wetlands of Cuddalore District

| **District Name** | Cuddalore | | | |
|---|---|---|---|---|
| **Wetland Name** | Wellington Lake | Perumal Lake | Veeranam Lake | Bahour Lake |
| **Wetland area (ha)** | 1534 | 1281 | 2418 | 401 |
| **Buffer Area in Hectare (ha)** | 6283.87 | 6679.46 | 7631.22 | 2933.56 |
| **Air Temperature °C** | 30.7 | 35.8 | 31 | 29.2 |
| **Water Temperature °C** | 30.2 | 30 | 28.8 | |
| **Humidity %** | 65 | 62 | 68 | 75 |
| **Nutrients in Water** | Oligotrophic | Mesotrophic | Mesotrophic | Eutrophic |
| **Water pH** | 8.8 | 8.1 | 8.8 | Water not accessible |
| **Water TDS ppm** | 1120 | 940 | 280 | |
| **Water Conductivity ppm** | 1589 | 1330 | 1080 | |
| **Light Penetration cms** | 3 | 60 | 41 | |
| **Water Salinity ppt** | 0.787 | 0.661 | 0.209 | |
| **DO mg/L** | 5.49 | 6.50 | 12.20 | |
| **PO4P mg/L** | 0.011 | 0.016 | 0.017 | |
| **Water Na ppm** | 2148 | 1830 | 52.3 | |
| **Water K ppm** | 9.9 | 6.3 | 3.8 | |
| **Water Li ppm** | 0.8 | 0.7 | 0 | |
| **Water Ca ppm** | 66 | 68.2 | 29.2 | |
| **Soil Colour code** | 10R 5/2 | 2.5Y 5/2 | 10YR 6/4 | |
| **Soil Colour** | Weak Red | Grayish Brown | Light Yellowish Brown | soil was not accessible |
| **Soil pH** | 6.31 | 3.58 | 7.76 | |
| **Soil TDS ppm** | 1.7 | 1.16 | 412 | |
| **Soil Conductivity ppm** | 2400 | 1634 | 580 | |
| **Soil Salinity ppt** | 1.28 | 0.818 | 0.281 | |
| **Soil Na ppm** | 94.8 | 38.1 | 57.1 | |
| **Soil K ppm** | 4.1 | 8.6 | 2.4 | |
| **Soil Li ppm** | 0.1 | 0.2 | 0.1 | |
| **Soil Ca ppm** | 37.6 | 109.2 | 37.6 | |

**Bahour Lake**

**Bahour Lake** is the second largest lake in Puducherry state, it is a transboundary lake with a major portion in Puducherry and a small part in Tamil Nadu.This Lake is recognized as one of the Important Bird Areas (IBA) of Puducherry.

**Lake Survey Number**: 1/6

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as Bahour Lake (Plate 9).

1.2 Villages that surround the wetland include Bahour, Karaimedu, Chinakaraimedu, Megamedu, Ulleripittu, Karanapppattu.

1.3 & 1.4 The lake is based in Cuddalore District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 48'45.1" N; 11° 49'00.6" N; 11° 49'15.3" N; 11° 49'39.1" N; and Longitude: 079° 44'09.4" E; 079° 44'05.7" E; 079° 43'45.0" E; 079° 43'45.0" E;

1.6 The wetland is not a Protected Area

1.7 The wetland comes under the jurisdiction of PWD Cuddalore division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 401 hectares (Map 5.2).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 3.0 meters for the wetland.

2.4 The elevation of the wetland is 16 to 23 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of intermitant nature with extreme rare occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was not collected as the wetland was completely covered by *Eichornea crasipess* making the waters inaccessible
e) The lake has fresh water as per the secondary information.
f) The wetland was observed to be closer to Eutrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation. Moreover the wetland receives large quantities of sewage and effluents and is rich in nutrients the wetland has agriculture undertaken within the wetland.

2.6 Climatic setting

a) Rainfall for the month of December in Madurai was 0.0 mm.
b) The atmospheric temperature varied between 25.1 and 29.2°C and the humidity was 71 to 75 %

2.7 The area of zone of influence is 2933.56 hectares with a fixed buffer area of 2 kms around the wetland (Map 5.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/schrubland 10 %; |
| Agriculture 65%; | Settlements (rural) 25%; |
| Settlements (Urban) 25%; | Industries 0%. |

2.9 The comparison of the wetland for the years 2009 and 2017 is given in Map 5.2 & 5.3.

**Section III- Biodiversity**

3.1 List of Plant species: 53 species of plants were recorded around the wetland during our visit (Table 5.3).

3.2 List of animal species: 66 animal species including 4 domestic species were recorded during the survey (Table 5.4a-h)

3.3 Species of Conservation importance: One near Threatened species of fish were observed during the survey (Table 5.4a-h)

3.4 Major Plant invasive alien species and extent of invasion: 14 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.*formed nearly 95 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: *Tilapia sp*. is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around and within the wetland and the ground water is also used for irrigation.

4.3 Fishery is undertaken without any permission in the lake, recreational fishery is also practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.7 It is a major source of ground water recharge.

4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.9 The wetland does have several temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.

4.10 There are agriculture or plantation activities within the wetland.

4.11 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture as the agriculture is practiced within the wetland.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.

6.3 There are invasive plant species that is changing the habitat of the wetland.

6.4 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment. activities. The siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is less than 2500m mean Sea level. The wetland is shared by Pondicherry union territory and Tamil Nadu State.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chandl should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**


Anjan Kumar Prusty., Arun, P.R., Bhupathy, S., Murugesan, M. and Rachna Chandra (2011) Comprehensive Management Action Plan for Conservation of Ousteri Lake, Puducherry, India. pp. 1-116.

Jhunjhunwala, S. (1998) The Ornithological importance of Ousteri Lake and Bahour Lake: A study of the habitat preferences of their waterfowl and waders, M.Sc., Dissertation, Salim Ali School of Ecology and Environmental Sciences, Pondicherry University.

Padmavathy, A. (2012) Impacts of Organic and Conventional farming practices on selected Agro-ecosystem services in Bahour region, Puducherry, Ph.D., Thesis, Pondicherry University, Puducherry, India.

Prasad, S.N., Jaggi, A.K., Kaushik, P., Vijayan, L., Muralidharan, S. and Vijayan, V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, pp. 222.

Priya Davidar (2011) Wetland Birds of Pondicherry Region, A pocket field guide, Illustrations by Christian Puyravaud and Sabrina Siga Published by: ECOS 9A, Frederic Osanam Street Colas Nagar Puducherry, India.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, pp. 532.

Zearamand, P. and Sivakumaresan, R. (2012) A Rehabilitation of Irrigation Tank through Sustainable Agriculture Productivity - A Case Study in Bahour Commune at Puducherry Region. *Strength for Today and Bright Hope for Tomorrow Volume* 12: 9 September 2012 ISSN 1930-2940.


Table 5.3: List of Plant species recorded along the Bahour Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 3 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 4 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 5 | *Portulaca oleracea* | Indian Parseland | Paruppu keerai, Pulikkeerai | Portulacaceae | Native | NA |
| 6 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 7 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 8 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 9 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 10 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 11 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 12 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 13 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 14 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 15 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 16 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 17 | *Carica papaya* | Papaya Tree | Papali maram | Caricaceae | Native | DD |
| 18 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 19 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 20 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 21 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 22 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 23 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 24 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 25 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 26 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 27 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 28 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 29 | *Trichodesma indicum* | Indian Borage | Kallutaitumapi | Boraginaceae | Native | NA |
| 30 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 31 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 32 | *Hewittia malabarica* | Clustered Morning Glory | Onaankodi, Onan Kodi | Convolvulaceae | Invasive | NA |
| 33 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 34 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 35 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |
| 36 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 37 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 38 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 39 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 40 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 41 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 42 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 43 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 44 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 45 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 46 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 47 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 48 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 49 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 50 | *Cyperus rotundus* | Common nut sedge, coco grass, nutgrass, purple nutsedge | Korai, korai kilangu, muthakasu | Cyperaceae | Native | LC |
| 51 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 52 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 53 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 5.4a: List of Insects recorded along the Bahour Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 5.4b: List of Butterflies recorded along the Bahour Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Dark Grass Blue | *Zizeeria karsandra* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 6 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 7 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 8 | Grey Pansy | *Junonia atlites* | Nymphalinae | Common |
| 9 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 5.4c: List of Odonata recorded along the Bahour Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |

| | | | | |
|---|---|---|---|---|
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 4 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 5 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 6 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 7 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 8 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 9 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 10 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 5.4d: List of Arachnida recorded along the Bahour Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 5.4e: List of Fishes recorded form the Bahour Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category | IASI |
|---|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU | IASI |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA | |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT | |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC | IASI |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC | - |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC | |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC | |
| 8 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC | |
| 9 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC | |
| 10 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC | |
| 11 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC | |
| 12 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC | |
| 13 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC | |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 5.4f: List of Reptiles recorded along the Bahour Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

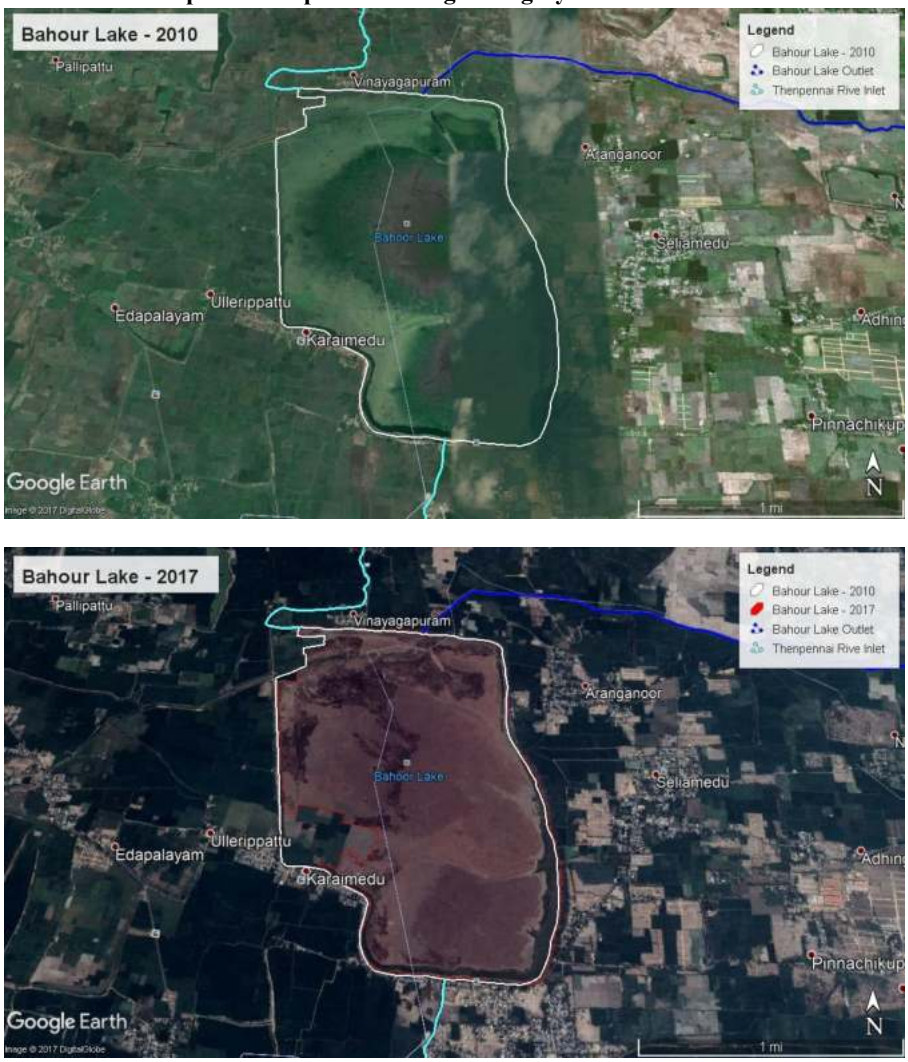
Table 5.4g: List of Birds recorded along the Bahour Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 8 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 9 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 10 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 11 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 12 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 13 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 14 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 15 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 16 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 17 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 18 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 19 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 20 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 21 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

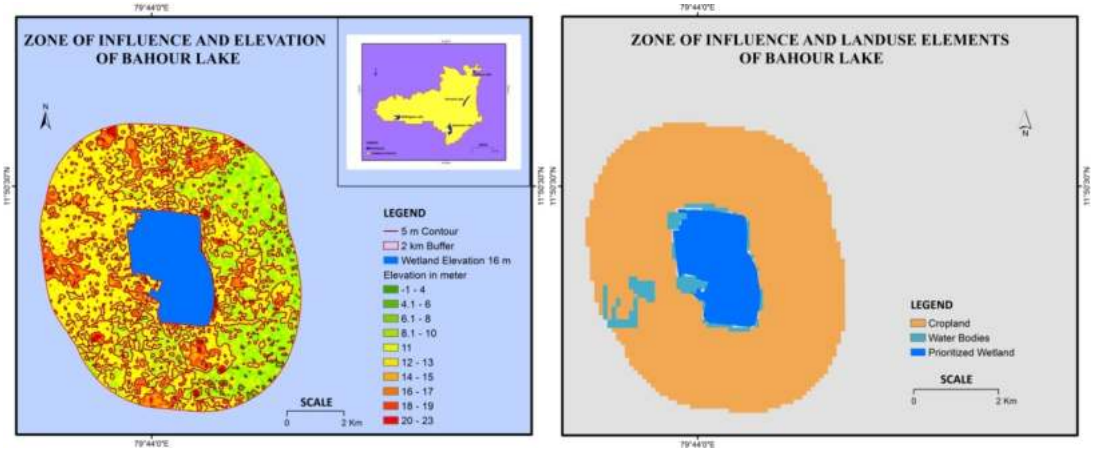
Table 5.4h: List of Mammals recorded along the Bahour Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |

**Map 5.2: Comparative Google imagery for Bahour Lake**




**Map 5.3: The zone of influence around the Bahour Lake**



**Perumal Lake**

**Lake Survey Number:** Not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Perumal eri (Plate 9).

1.2 Villages that surround the wetland include Aayathurai, Chittavali, Aalapakkam, Aayanthur and Karuppampadi.

1.3 & 1.4 The lake is based in Kurinjipadi in Cuddalore District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 31'36.9" N; 11° 31'50.8" N; 11° 32'09.7" N; 11° 32'52.6" N; 11° 32'17.2" N; 11° 33'27.6" N; and Longitude: 079° 39'05.5" E; 079° 39'10.8" E; 079° 39'19.1" E; 079° 39'34.1" E; 079° 39'20.4" E; 079° 39'50.0"

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Cuddalore division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 1281 hectares (Map 5.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lakes.

2.3 Based on the secondary information the average depth is 2.5 to 4 meters for the wetland.

2.4 The elevation of the wetland is 16 to 19 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and Nevieli Lignite Corporation.
b) The water in the wetland is permanent in nature with some water present through the year.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.
d) The pH of the water was between 7.8 and 8.3.
e) The lake has fresh water as the salinity of the water at the time of sampling was 0.661 ppt.
f) The wetland has the aquatic vegetation like *Ipomoea sp.*, grass species and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of February, 2018 in Cuddalore was 0.0 mm.
b) The atmospheric temperature varied between 29.0 and 35.8°C and the humidity was 52 and 72%

2.7 The area of zone of influence is 6679.46 hectares with a fixed buffer area of 2 kms around the wetland (Map 5.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands / scrubland 0%; |
| Agricultural lands 45 %; | Settlements (Rural) 45%; |
| Settlement (Urban) 10%; | Industries 0%. |

2.9. The comparison of the wetland for the years 2011 and 2018 is given in Map 5.4& 5.5.

**Section III- Biodiversity**

3.1 List of Plant species: 35 species of plants were recorded around the wetland during our visit (Table 5.5).

3.2 List of animal species; 49 animal species including 4 domestic species were recorded during the survey (Table 5.6a-g).

3.3 Species of Conservation importance: One Threatened species of bird was observed during the survey (Table 5.6a-g).

3.4 Major Plant invasive alien species and extent of invasion: Eleven invasive plants including *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The local villages receive water form the village Panchayat and municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The are farmlands where agriculture is undertaken around the wetland using both the wetland and borewell water.

4.3 Commercial and recreational Fishery is undertaken. The PWD is used to introduce the fingerlings and give out the contract annually.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no runoff form the surrounding area as it is a water deficient area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There are high tension wires passing through the wetland. Solid waste dumping is also seen.

4.11 The site is used majorly used by the locals for grazing their cattle and goats.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is commercial fishery undertaken as well.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping, a road network is also around the wetland. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is no agriculture undertaken within the wetlands.

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle is undertaken as well the Duck farming.

5.5 There is withdrawal of water for agriculture or fishery purpose.

5.6 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The pollution and sewage influence is high.

6.3 Encroachment is also observed.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories. The wetland is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form gradually changing the wetland character, solid waste dumping. The effluent release has threatened the wetland in a major way.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development is a major threat that needs to be regulated. The wetland is facing a sever threat form the effluent release effecting the livelihood of the locals.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no literature available for Perumal Lake.

Table 5.5: List of Plants recorded along the Perumal Lake

| S. No | Scientific Name | Common English Name | Local Hindi Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Malvastrum coromandelianum subsp. coromandelianum* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 3 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 4 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 5 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 6 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 7 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 8 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 9 | *Carica papaya* | Papaya Tree | Papali maram | Caricaceae | Native | DD |
| 10 | *Opuntia stricta* | Erect Prickly Pear | Sappathikalli | Cactaceae | Invasive | LC |
| 11 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 12 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, | Molluginaceae | Native | |
| 13 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 14 | *Oldenlandia umbellata* | Chay Root, Indian madder, | Chayam, Chayaver, | Rubiaceae | Native | |
| 15 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 16 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 17 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 18 | *Marsdenia volubilis* | Sneeze Wort, Cotton milk plant | Kotippalai | Apocynaceae | Native | NA |
| 19 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 20 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 21 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 22 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 23 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 24 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai, | Nyctaginaceae | Native | NA |
| 25 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 26 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 27 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 28 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 29 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 30 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 31 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 32 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, | Arecaceae | Native | NA |
| 33 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 34 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 35 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 5.6a: List of Insects recorded along the Perumal Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 3 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 5.6b: List of Butterflies recorded along the Perumal Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 4 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 5 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 5.6c: List of Odonata recorded along the Perumal Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 4 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 5.6d: List of Fishes recorded form the Perumal Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 2 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 3 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 4 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 5 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 6 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 5.6e: List of Reptiles recorded along the Perumal Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 5.6f: List of Birds recorded along the Perumal Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 2 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 5 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 6 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 7 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 8 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 9 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 10 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 11 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 12 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 13 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 14 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 15 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 16 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 17 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 18 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 19 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 22 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 23 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 24 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |

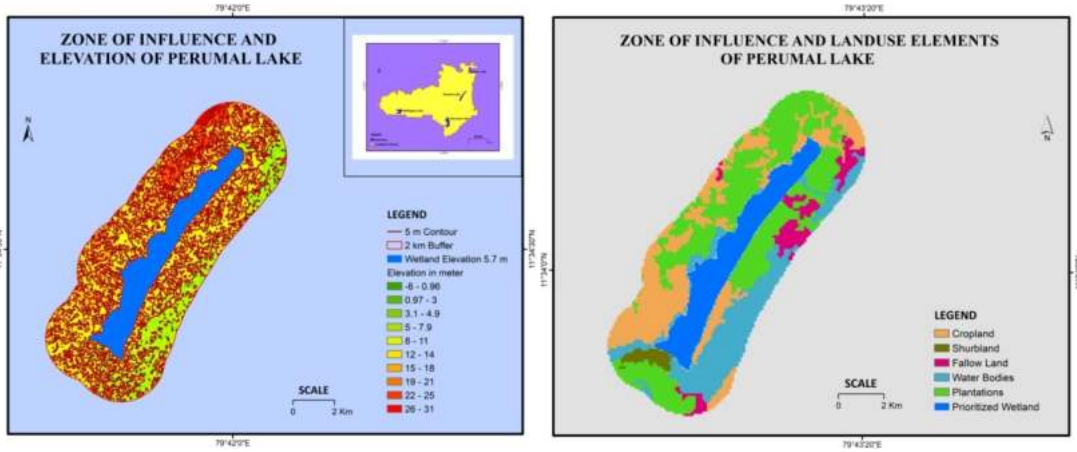
Table 5.6g: List of Mammals recorded along the Perumal Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Pig | *Sus domesticus* | Suidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 5.4: Comparative Google imagery for Perumal Lake**




**Map 5.5: The zone of influence around the Perumal Lake**



**Veeranam Lake**

Veeranam Lake (Veeranarayanapuram Lake) is located 14 km (8.7 mi) South West of Lalpet in Cuddalore district. The lake located 235 km form Chennai, India, is one of the water reservoirs planned to supply water to Chennai. Veeranam Lake was built in the Tenth Century during the time of Greater Cholas, form 907–955 AD and is a 16-kilometre long dam in northern Tamil Nadu. The Veeranam lake gets water form Kollidam via Vadavaru River. The lake remains dry for the major part of the year.

**Lake Survey Number:** Not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Veeranam Lake (Plate 10) also known as Veeranam Tank and Veeranarayanapuram Lake.

1.2 Villages that surround the wetland include Veeranam, Lalpet, Ruthirasolai, Palanchanallur, Karunagakaranallur, Kandhakumaran, Triuchinnapuram, Setthiyarthoppu, Chithamalli and Pudayur.

1.3 & 1.4 The lake is based in Cuddalore District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 18'10.5" N; 11° 18'16.1" N; 11° 08'20.9" N; 11° 08'50.8" N; 11° 19'50.2" N; 11° 20'49.7" N; 11° 21'45.9" N; 11° 22'41.1" N; 11° 24'15.4" N;and Longitude: 079° 33'00.1" E; 079° 33'00.1" E; 079° 33'00.1" E; 079° 32'58.6" E; 079° 32'57.1" E; 079° 32'46.1" E; 079° 32'21.6" E; 079° 32'06.9" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Cuddalore division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 2418 hectares (Map 5.6).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category in the sub category intermitant seasonal lakes.

2.3 Based on the secondary information the average depth is 5 meters for the wetland.

2.4 The elevation of the wetland is 18 to 24 meters (asl) 2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area, Metur dam and Vadavuru River canal.
b) The water in the wetland is intermittent nature with some water is present only for a months after the rains.
c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields and goes through the Setthiiyar Gokul canal and Lalpet canal to the sea.
d) The pH of the water was 8.8
e) The lake has fresh water as the salinity of the water at the time of sampling was 0.209 ppt.
f) The wetland has *Ipomoea sp.*, grass species and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of February, 2018 in Cuddalore was 0.0 mm.
b) The atmospheric temperature varied between 29.8 and 31.0 °C and the humidity was 58 to 68 %

2.7 The area of zone of influence is 7631.22 hectares with a fixed buffer area of 2 kms around the wetland (Map 5.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands / scrubland 10%; |
| Agricultural lands 60 %; | Settlements (Rural) 30%; |
| Settlement (Urban) 0%; | Industries 0%. |

2.9. The comparison of the wetland for the years 2011 and 2017 is given in Map 5.6 & 5.7.

**Section III- Biodiversity**

3.1 List of Plant species: 34 species of plants were recorded around the wetland during our visit (Table 5.7).

3.2 List of animal species: 72 animal species including 4 domestic species were recorded during the survey (Table 5.8a-h)

3.3 Species of Conservation importance: One Threatened species of birds and four fish were observed during the survey (Table 5.8a-h)

3.4 Major Plant invasive alien species and extent of invasion: Six invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for drinking purpose only during monsoon, it is provided to Chennai corporation. The local villages receive water form the municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The farmlands where agriculture is undertaken around the wetland use borewell water.

4.3 Commercial and recreational Fishery is undertaken. The PWD introduces the fingerlings and give out the contract annually.

4.4 The wetland is not used for any aquatic food cultivation

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no runoff form the surrounding area as it is a water deficient area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There are high tension wires passing through the wetland.

4.11 The site is used majorly by the locals for grazing their cattle and goats.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is commercial fishery undertaken as well.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping, a road network is also around the wetland. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture or fishery purpose.

5.6 The wetland was faced drought for the past 2 years.

5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The wetland has been facing drought condition for the past 2 years.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories but the PWD and the TWAD board gives it some protection. The wetland is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development is a major threat that needs to be regulated. These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

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Table 5.7: List of Plant species recorded along the Veeranam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 6 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 7 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 8 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 9 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 10 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 11 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 12 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 13 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 14 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 15 | *Barleria acuminata* | Long-flower Barleria | Vellai Kurinji | Acanthaceae | Native | NA |
| 16 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 17 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 18 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 19 | *Boerhavia repens* | Erect Spiderling | | Nyctaginaceae | Invasive | NA |
| 20 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 21 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 22 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 23 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 24 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 25 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 26 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 27 | *Euphorbia antiquorum* | Triangular Spurge, Square Spurge, Square milk hedge, Fleshy spurge | Chaturakalli, Kalli, Kantiravam, Kodiravam, Tiruvargalli | Euphorbiaceae | Native | |
| 28 | *Asparagus racemosus* | Satawari | Tannir vittan | Asparagaceae | Native | NA |
| 29 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 30 | *Aristida adscensionis* | | | Poaceae | Native | NA |
| 31 | *Bothriochloa pertusa* | Pitted beard grass | | Poaceae | Native | NA |
| 32 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 33 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 34 | *Urochloa setigera* | Signal grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 5.8a: List of Insects recorded along the Veeranam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 5.8b: List of Butterflies recorded along the Veeranam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 5 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Common Crow | *Euploea core* | Danainae | Common |
| 8 | Dark Evening Brown | *Melanitis phedima varaha* | Satyrinae | Uncommon |
| 9 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 5.8c: List of Odonata recorded along the Veeranam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 5.8d: List of Arachnida recorded along the Veeranam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 5.8e: List of Fishes recorded form the Veeranam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 9 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 10 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 13 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendaimeen | Anabantidae | DD |
| 14 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 15 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 16 | *Stolephorus commersonii* | Commerson's anchovy | Nethili | Engraulidae | NE |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 5.8f: List of Reptiles recorded along the Veeranam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 3 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 5.8g: List of Birds recorded along the Veeranam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 10 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 11 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 12 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 13 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 14 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 15 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 16 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 17 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 18 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 19 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 20 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 21 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 22 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 23 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 24 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 25 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 26 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

Table 5.8h: List of Mammals recorded along the Veeranam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Pig | *Sus domesticus* | Suidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Common |

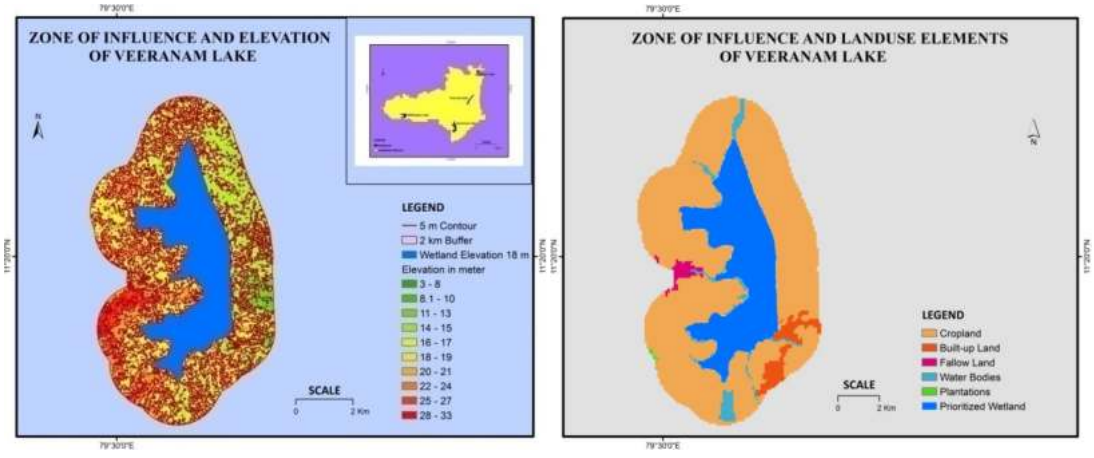
**Map 5.6: Comparative Google imagery for Veeranam Lake**







**Map 5.7: The zone of influence around the Veeranam Lake**



**Wellington Lake**

**Lake Survey Number:** Not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Wellington Lake (Plate 10) it is also called as Keelacheravui and Yama eri.

1.2 Villages that surround the wetland include Aayathurai, Chittavali, Aalapakkam, Aayanthur and Karuppampadi.

1.3 & 1.4 The lake is based in Thittakudi in Cuddalore District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 25'08.5" N; 11° 25'32.9" N; 11° 24'59.5" N; 11° 24'55.7" N; and Longitude: 079° 06'01.8" E; 079° 06'08.4" E; 079° 06'14.5" E; 079° 05'56.9" E; 079° 05'54.9" E.

1.6 The wetland is not a Protected Area but around 20 % of the wetland is with the forest department.

1.7 The wetland comes under the jurisdiction of PWD, Cuddalore division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 1534 hectares (Map 5.8).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lakes.

2.3 Based on the secondary information the average depth is 8 to 10 meters for the wetland.

2.4 The elevation of the wetland is 82 to 89 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and Vellar River.
b) The water in the wetland is permanant in nature with some water present through the year.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields. The overflow goes to Pulivalam kulam.
d) The pH of the water was 8.8.
e) The lake has fresh water as the salinity of the water at the time of sampling was 0.787 ppt.
f) The wetland has the aquatic vegetation like *Ipomoea sp.*, *Acaccia sp, Prosopis sp*. and grass species andother weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of February, 2018 in Cuddalore was 0.0 mm.
b) The atmospheric temperature was 30.7°C and the humidity was 65%

2.7 The area of zone of influence is 7631.33 hectares with a fixed buffer area of 2 kms around the wetland (Map 5.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 20%; | Grasslands / scrubland 05%; |
| Agricultural lands 75 %; | Settlements (Rural) %; |
| Settlement (Urban) 0%; | Industries 0%. |

2.9. The comparison of the wetland for the years 2012 and 2018 is given in Map 5.8 & 5.9.

**Section III- Biodiversity**

3.1 List of Plant species: 31 species of plants were recorded around the wetland during our visit (Table 5.9).

3.2 List of animal species: 43 animal species including 2 domestic species were recorded during the survey (Table 5.10a-h)

3.3 Species of Conservation importance: One Threatened species of birds and four fish were observed during the survey (Table 5.10a-h)

3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Prosopis juliflora*, *Parthenium hysterophorus* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The local villages receive water form the village Panchayat and municipal corporation provides drinking water form the borewell water and Vellar water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The are farmlands where agriculture is undertaken around the wetland use both the wetland and borewell water.

4.3 Commercial and recreational Fishery is undertaken. The PWD used to introduce the fingerlings and give out the contract annually.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no runoff form the surrounding area as it is a water deficient area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There are high tension wires passing through the wetland.

4.11 The site is used majorly used by the locals for grazing their cattle and goats.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is commercial fishery undertaken as well.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is no agriculture undertaken within the wetlands

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture or fishery purpose.

5.6 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The garbage dumping and sewage influence is low.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories. The wetland is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development is a major threat that needs to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published literature available for Wellington Lake

Table 5.9: List of Plants recorded along the Wellington Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 3 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 4 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 5 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 6 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 7 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 8 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 9 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 10 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 11 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 12 | *Zaleya decandra* | Many Stamen Horse Pursland | Charanai | Aizoaceae | Native | NA |
| 13 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 16 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 17 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 18 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 19 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 20 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 21 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 22 | *Aristolochia bracteolata* | Worm Killer, Dutchman's Pipe, Bracteated Birth Wort | Aduthinnarppalai | Aristolochiaceae | Native | |
| 23 | *Acalypha ciliata* | Fringed Acalypha | --- | Euphorbiaceae | Native | NA |
| 24 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 25 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 26 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 27 | *Flueggea virosa* | Common Bushweed | Rubulai, pula, varadbula, vedbula, vellaipula | Phyllanthaceae | Native | |
| 28 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 29 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 30 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 31 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 5.10a: List of Insects recorded along the Wellington Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 2 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 5.10b: List of Butterflies recorded along the Wellington Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |

| | | | | |
|---|---|---|---|---|
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 4 | Double-Branded Crow | *Euploea sylvester coreta* | Danainae | Common |
| 5 | Joker | *Byblia ilithyia* | Biblidinae | Common |

Table 5.10c: List of Odonata recorded along the Wellington Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 5.10d: List of Arachnida recorded along the Wellington Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 5.10e: List of Fishes recorded along the Wellington Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 4 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 5.10f: List of Reptiles recorded along the Wellington Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

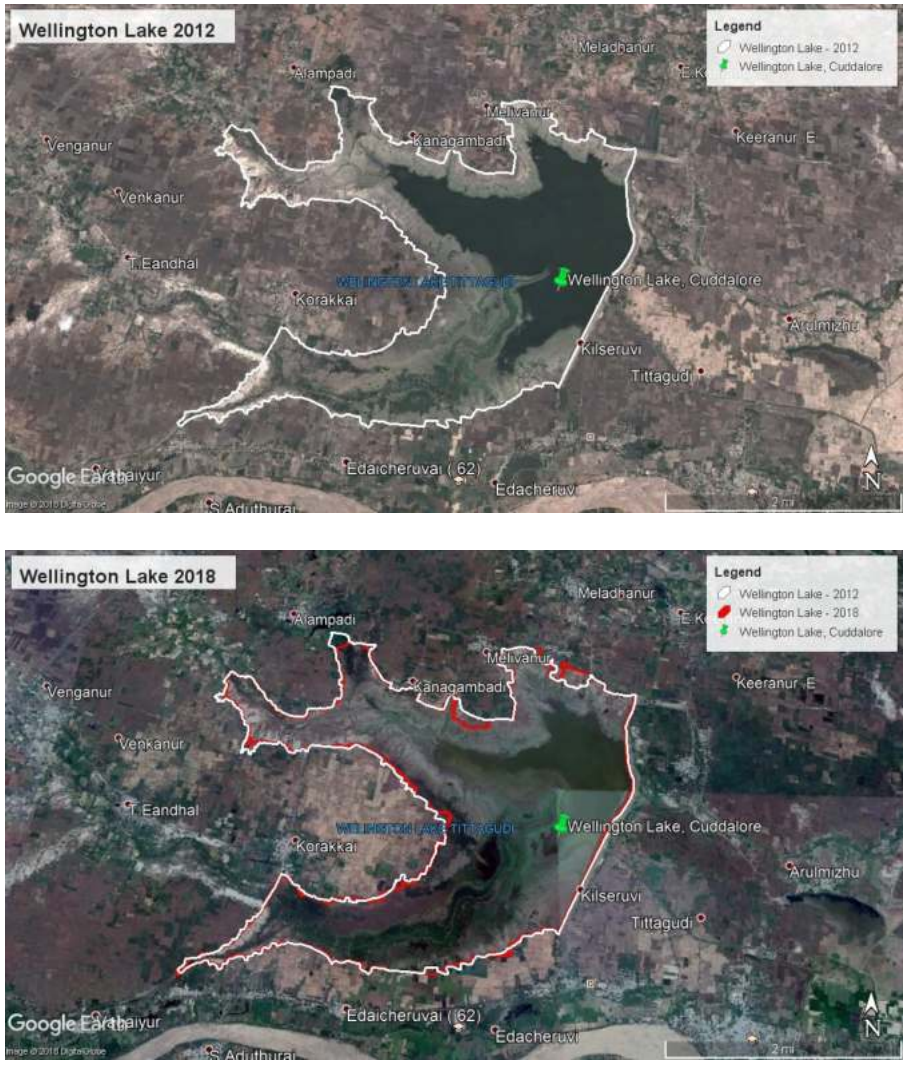
Table 5.10g: List of Birds recorded along the Wellington Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Red-naped Ibis | *Pseudibis papillosa* | Threskiornithidae | Least Concern |
| 5 | Eurasian Spoonbill | *Platalea leucorodia* | Threskiornithidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 8 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 9 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 10 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 11 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 12 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 13 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 14 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 15 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 16 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 17 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 18 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 19 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 20 | Oriental Magpie Robin | *Copsychus saularis* | Muscicapidae | Least Concern |

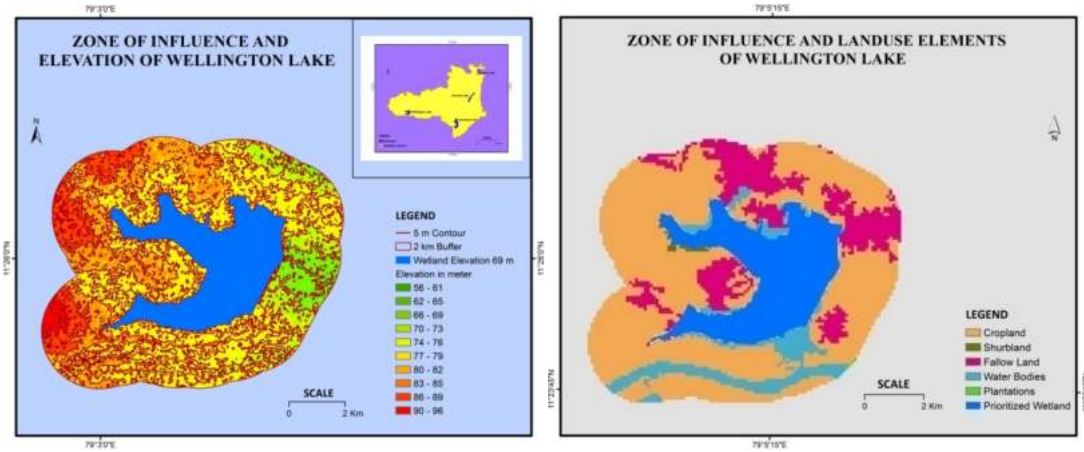
Table 5.10h: List of Mammals recorded along the Wellington Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 5.8: Comparative Google imagery for Wellington Lake**




**Map 5.9: The zone of influence around the Wellington Lake**



## Dharmapuri District

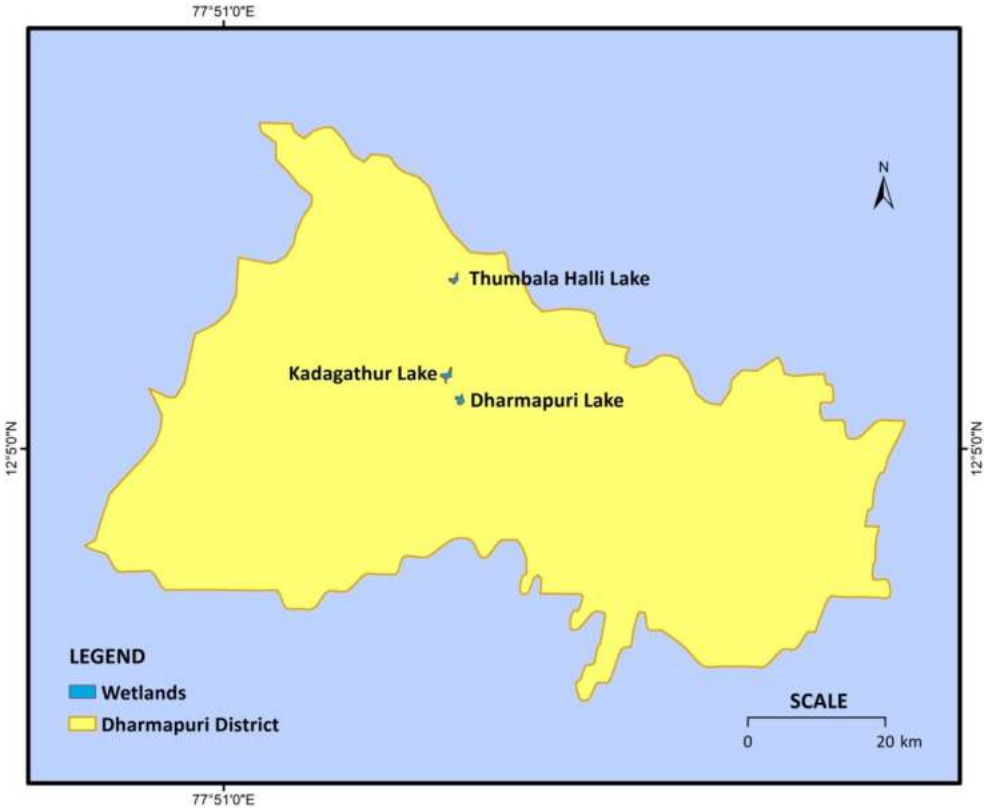
### 1. Introduction

Dharmapuri is situated in the north-western corner of the state and is bounded by Tiruvannamalai and Villupuram Districts on the east, Salem District on the South, Krishnagiri District on the north and Kaveri River on the west. Dharmapuri district's economy depends on agriculture. About 70% of the population of the district depends on agriculture for their livelihood. A major portion of the cultivable land in the state comes under horticulture.

Dharmapuri was called Tagadur during the Sangam era. The name Tagadur is derived form two Tamil words, "Thagadu" meaning iron (iron ore), and "Oor" meaning "place". The name Tagadur was changed to Dharmapuri after the Sangam period.

Total geographic area of Dharmapuri is 4497.77 km². Total area under wetland is 18215 ha, which includes 482 small wetland (<2.25 ha). Lakes/Ponds occupies 12.42% of wetland area. The major wetland types are Tanks/Ponds and Reservoirs. There are about 812 Tanks/Ponds with 7069 ha area (38.81%) and six reservoirs (6329 ha) exists in the district.

We decided the wetlands based on the size and the work done by the municipality for the conservation of the wetland (Map 6.1). Inaddition we also checked the e-bird web portal for information on the bird sightings form the wetlands as well as the google imagery.




**Map 6.1: Wetlands of Dharmapuri District Assessed for Prioritization**

### Observations

Of the three wetlands selected in the district, Kadagathur is the largest while Thumbala Halli Lake is the smallest of the three wetlands. Around the three wetlands, we recorded 87 plant species both aquatic and

terrestrial including 15 invasive species (Table 6.1). The faunal components totaled 74 species with the representation of 30 bird species of including the wetland birds. During the field visit Kadagatur was a dry wetland so water was not sampled, on the basis of the field situation the Dharmapuri Lake was Mesotrophic while Thumbala Halli Lake was Oligotrophic in status (Table 6.2). A comparison of the soil for the three lakes revealed that the Kadagatur lake had hydric properties with mineral contents that exist for natural wetlands.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Dharmapuri Lake. Encroachment around the lakes was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Kadagathur Lake
2. Dharmapuri Lake
3. Thumbala Halli Lake.

Table 6.1: The flora and fauna recorded form the wetlands of Dharmapuri District

| S. No | Name of the Wetland | Plants (Invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Dharmapuri Lake | 52 (11) | 3 | 4 | 5 | 0 | 2 | 0 | 2 | 26 | 5 |
| 2 | Thumbala Halli Lake | 47 (5) | 7 | 6 | 2 | 0 | 12 | 0 | 1 | 21 | 4 |
| 3 | Kadagathur Lake | 19 (8) | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 8 | 2 |
| | Total | 87 (15) | 8 | 6 | 5 | 0 | 12 | 0 | 2 | 36 | 5 |

Table 6.2: The water and soil quality assessed form the wetlands of Dharmapuri District

| District Name | Dharmapuri | | |
|---|---|---|---|
| Wetland Name | Dharmapuri Lake | Kadagathur Lake | Thumbala Halli Lake |
| Wetland area (ha) | 112 | 128 | 88 |
| Buffer Area in Hectare (ha) | 2220.92 | 2609.99 | 2246.44 |
| Air Temperature °C | 32 | 30 | 29.5 |
| Water Temperature °C | 27.9 | | 28.5 |
| Humidity % | 20 | 46 | 50 |
| Nutrients in Water | Mesotrophic | not known | Oligotrophic |
| Water pH | 8.8 | | 8.7 |
| Water TDS ppm | 790 | | 416 |
| Water Conductivity ppm | 1420 | | 587 |
| Light Penetration cms | 13 | | 27 |
| Water Salinity ppt | 0.461 | | 0.285 |
| DO mg/L | 18.29 | | 2.64 |
| PO4P mg/L | 0.009 | | 0.007 |
| Water Na ppm | 193 | | 406 |
| Water K ppm | 22.9 | | 9.7 |
| Water Li ppm | 0.3 | | 0.3 |
| Water Ca ppm | 45.8 | | 85.4 |
| Soil Colour code | 10YR 5/3 | 7.5YR 5/3 | 10YR 5/3 |
| Soil Colour | Brown | Brown | Brown |
| Soil pH | 7.8 | 7.8 | 7.69 |
| Soil TDS ppm | 524 | 128 | 252 |
| Soil Conductivity ppm | 737 | 180.2 | 355 |
| Soil Salinity ppt | 0.36 | 0.088 | 0.171 |
| Soil Na ppm | 50.9 | 24.3 | 9.5 |
| Soil K ppm | 19.7 | 3.6 | 5.4 |
| Soil Li ppm | 0.2 | 0 | 0.1 |
| Soil Ca ppm | 43.9 | 9.8 | 22.9 |

**Dharmapuri Lake**

**Lake Survey Number:** Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Dharmapuri lake or Ramakka Lake (Plate 11).

1.2 Villages that surround the wetland include Dharmapuri Old Town, maphikonepalayam, Metturkannur and Kumarasamy pettai.

1.3 & 1.4 The lake is based in Dharmapuri district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 08'43.3" N; 12° 08'48.4" N; 12° 08'57.6" N; and Longitude: 078° 09'53.5" E; 078° 09'51.8" E; 078° 09'47.40" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 112 hectares (Map 6.2).

2.2 The Wetland type - the wetland belongs to the Manmade (inland) tank category in the sub category permanent tank.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 452 to 457 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and sewage.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow joins the Ponni River and the agriculture fields.
d) The pH of the water was 8.8.
e) The salinity of the lake was 0.461 ppt.
f) The wetland had *Ipomoea sp., Prosopis juliflora, Lantna camera*, grass sp. and other weeds that dominated the landscape i.e 30%.

2.6 Climatic setting

a) Rainfall for the month of February, 2018 in Dharmapuri was 0.00 mm.
b) The atmospheric temperature was 32°C and the humidity was 20 %

2.7 The area of zone of influence is 2220.92 hectares with a fixed buffer area of 2 kms around the wetland (Map 6.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 50%; | Settlements (rural) 20% |
| Settlements (Urban) 20%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2017 is given in Map 6.2 & 6.3.

**Section III- Biodiversity**

3.1 List of Plant species: 47 species of plants were recorded around the wetland during our visit (Table 6.3).

3.2 List of animal species: 57 animal species including 4 domestic species were recorded during the survey (Table 6.4 a-g).

3.3 Species of Conservation importance: Threatened species of birds were not observed but two species of fish were reported during the survey (Table 6.4 a-g).

3.4 Major Plant invasive alien species and extent of invasion: Eleven invasive plants including *Prosopis juliflora*, *Lantana camara* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species *Tilapia* and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture.
4.2 The overflow water feeds the agricultural lands and Pooni River cannel.
4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose. The borassus plant sap is also collected for local consumption and sale in the local market.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has a major temples along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is used majorly used by the locals for agriculture and fish culture.
4.12 There are agriculture and plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded a few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt not undertaken.
4.16 The local visit the wetland as the municipality has developed the walking track. However, the entire area is littered with plastic making it a very sore site.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure, encroachment and garbage dumping.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a protected area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly due to solid waste dumping and plastic pollution.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The dumping of waste, sewage and effluents within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Dharmapuri lake**

Dhanasekaran, M., Saravana Bhavan, P., Manickam, N. and Kalpana, R. (2016) Physico-chemical characteristics and Zooplankton diversity in a perennial lake at Dharmapuri, Tamil Nadu, India. *Journal of Entomology and Zoology Studies* 2017, 5(1), pp. 285-292, P-ISSN: 2349-6800.

Manickam, N., Saravana Bhavan, P., Santhanam P., Muralisankar, T., Srinivasan, V., Radhakrishnan, S., Vijayadevan, K., Chitrarasu, P. and Jawahar Ali, A. (2014) Seasonal Variations of Zooplankton

Diversity in a Perennial Reservoir at Thoppaiyar, Dharmapuri District, South India. *Austin J Aquac Mar Biol* - 2004, Volume 1, Issue 1, pp. 1-7.

Manickam, N., Saravana Bhavan, P., Santhanam, P., Chitrarasu, P. and Jawahar Ali, A. (2012) Zooplankton diversity in a perennial freshwater lake. Diversity and Physiological Processes: Ed. Desai PV, Roy R, Goa University, 2012; pp. 25-37.

Shanthi, R., Bhavan, P.S. Vijayan, P., Radhakrishnan, S. and Karpagam, S. (2010) Evaluation of water quality and plankton population in a perennial shallow lake.*Res Environ Life Sci*. 2010; 3: pp. 163-168.

Siva Kumar K, Sujatha P. and Altaff K. (2001) Studies on the freshwater copepods and Cladocerans of Dharmapuri District, Tamil Nadu. *Journal Aqua Bio*.; 16, pp. 5-10.

Sivakumar, K. and Altaff, K. (2004) Ecological indices of freshwater copepods and Cladocerans form Dharmapuri District, Tamil Nadu, *Zoos' print journal* 19(5), pp. 1466-1468.

Table 6.3: List of Plant species recorded along the Dharmapuri Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 2 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 3 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 8 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Sesbania sesban* | Common Sesban, Egyptian Rattlepod | | Fabaceae | Native | NA |
| 11 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 12 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 13 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 14 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 15 | *Bidens pilosa* | Beggar Tick | Mukkuthi | Asteraceae | Exotic | NA |
| 16 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 17 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 18 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 21 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 22 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 23 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 24 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 25 | *Solanum nigrum* | Black nightshade,Blackberry nightshade,Nightshade, Poison berry | Manathakkali | Solanaceae | Native | NA |
| 26 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 27 | *Barleria acuminata* | Long-flower Barleria | Vellai Kurinji | Acanthaceae | Native | NA |
| 28 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 29 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 30 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 31 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai, Mukkuttikkodi | Nyctaginaceae | Native | NA |
| 32 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 33 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 34 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 35 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 36 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 37 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 38 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 39 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 40 | *Holoptelea integrifolia* | Indian Elm | Aaya | Ulmaceae | Native | NA |
| 41 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 42 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 43 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 44 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 45 | *Eleusine indica* | Indian crowfoot grass,Indian goose grass,Wiregrass | Thippa ragi, Keveru | Poaceae | Native | LC |
| 46 | *Enteropogon dolichostachyus* | Finger grass | | Poaceae | Native | NA |
| 47 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 6.4a: List of Insects recorded along the Dharmapuri Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 6.4b: List of Butterflies recorded along the Dharmapuri Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 2 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 4 | Common Crow | *Euploea core* | Danaidae | Common |
| 5 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 6.4c: List of Dragonflies recorded along the Dharmapuri Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 6.4d: List of Fishes recorded form the Dharmapuri Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |
| 12 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 6.4e: List of Reptiles recorded along the Dharmapuri Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

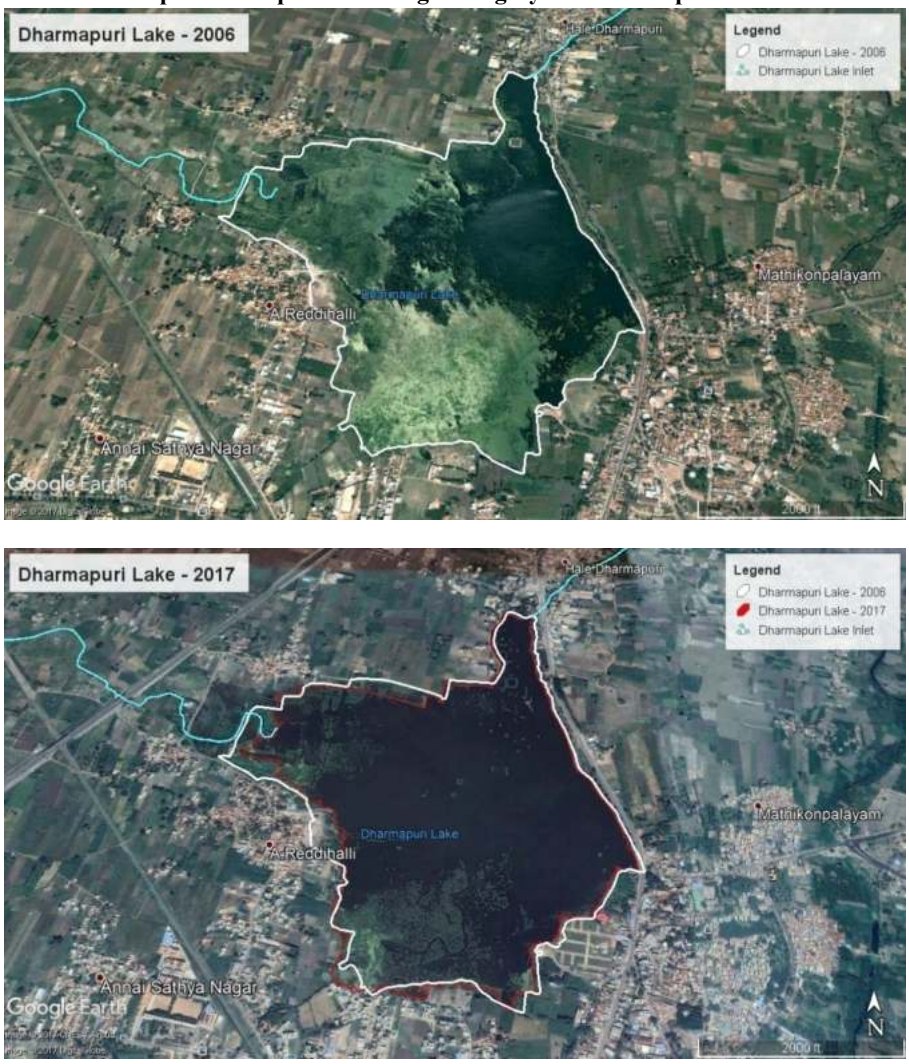
Table 6.4f: List of Birds recorded along the Dharmapuri Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Gargandy | *Anas querquedula* | Anatidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 6 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 7 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 8 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 9 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 10 | Common Snipe | *Gallinago gallinago* | Scolopacidae | Least Concern |
| 11 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 12 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 13 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 14 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 15 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 16 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 17 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 18 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 19 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 22 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 23 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 24 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 25 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 26 | White Wagtail | *Motacilla alba* | Motacillidae | Least Concern |

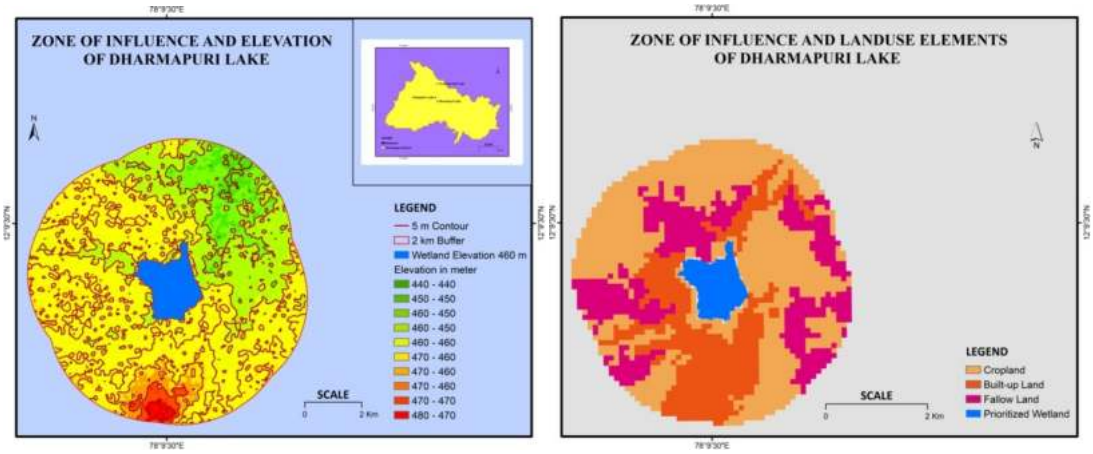
Table 6.4g: List of Mammals recorded along the Dharmapuri Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Common |

**Map 6.2: Comparative Google imagery for Dharmapuri Lake**




**Map 6.3: The zone of influence around the Dharmapuri lake.**



**Kadagathur Lake**

**Lake Survey Number:** Not provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Kadagathur eri or Kodagathur eri (Plate 11).

1.2 Villages that surround the wetland include Kadagatur, Mattiyambatti, Satukottai and Mettukottai.

1.3 & 1.4 The lake is based in Dharmapuri district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 10'25.6" N; 12° 10'33.9" N; 12° 10'36.7" N; and Longitude: 078° 08'21.7" E; 078° 08'21.9" E; 078° 08'27.1" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 128 hectares (Map 6.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank there is no water for the past 15 years because of the check dams in the feeder channel.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 454 to 459 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, panchapalli dam (no water now) the surrounding runoff form the catchment area and sewage.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater.
d) The pH of the water was not taken as the wetland was completely dry.
e) The salinity of the lake was not taken as the wetland was completely dry.
f) The wetland had *Ipomoea, Prosopis juliflora, Lantna camera*, grass sp. and other weeds that dominated the landscape i.e 80%.

2.6 Climatic setting

a) Rainfall for the month of August, 2018 in Dharmapuri was 0.00 mm.
b) The atmospheric temperature was 30°C and the humidity was 46 %

2.7 The area of zone of influence is 1887.75 hectares with a fixed buffer area of 2 kms around the wetland (Map 6.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 80%; | Settlements (rural) 20% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 6.4& 6.5.

**Section III- Biodiversity**

3.1 List of Plant species: 16 species of plants were recorded around the wetland during our visit (Table 6.5).

3.2 List of animal species: 15 animal species including 2 domestic species were recorded during the survey (Table 6.6a-e).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 6.6a-e).

3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Prosopis juliflora*, *Parthenium hysterophorus* and *Datura metel* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species *Tilapia sp.* and common carps were recorded as per the locals. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for agriculture.

4.2 The plants around the wetland are not used for any medicinal purpose. The borassus plant sap is also collected for local consumption and sale in the local market.

4.3 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.

4.4 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.5 It is a major source of ground water recharge.

4.6 There is insignificant runoff form the surrounding area.

4.7 The wetland has a major temple along its vicinity and major cultural and religious activities are performed in the wetland.

4.8 The site adjoining the wetland is used majorly used by the locals for agriculture.

4.9 There are agriculture activities within the wetland.

4.10 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.11 The mining for sand or silt is not undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure, encroachment and garbage dumping.

6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a protected area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly due to agriculture activities and solid waste dumping and plastic pollution.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The growing agriculture activities need to be regulated as this is increasing due to absence of water for over 15 years.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available.

Table 6.5: List of Plants recorded along the Kadagathur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 7 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 8 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 10 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 11 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 12 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 13 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 14 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 15 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 16 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 6.6a: List of Butterflies recorded along the Kadagathur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 2 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 6.6b: List of Odonates recorded along the Kadagathur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 6.6c: List of Reptiles recorded along the Kadagathur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

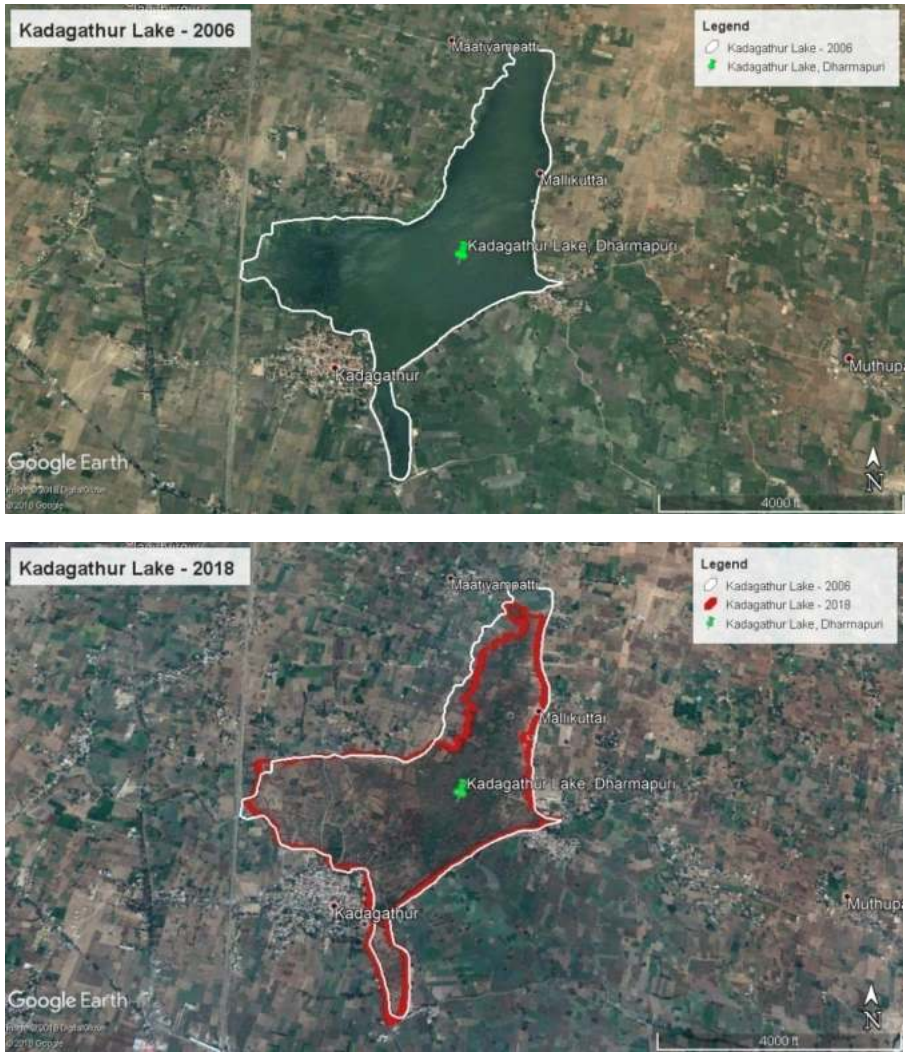
Table 6.6d: List of Birds recorded along the Kadagathur Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 3 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 4 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 5 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 6 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 7 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 8 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

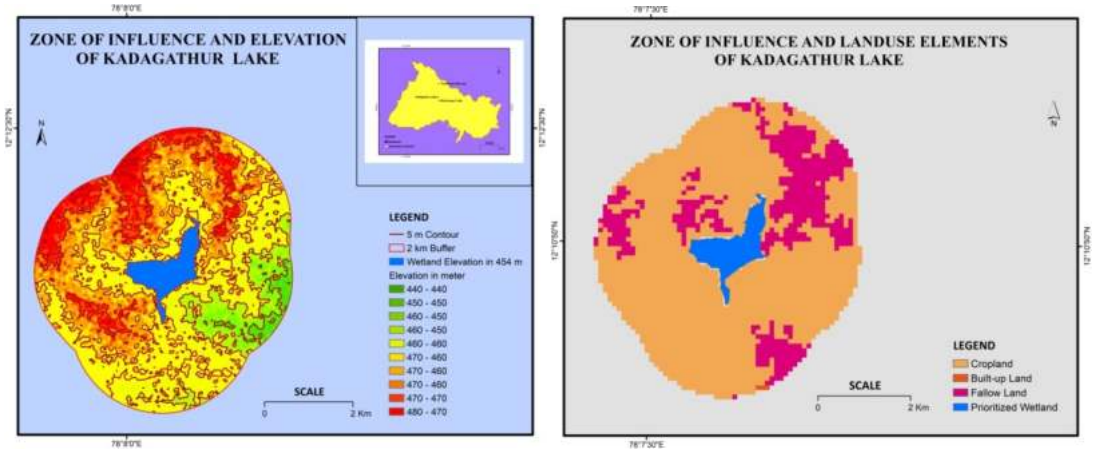
Table 6.6e: List of Mammals recorded along the Kadagathur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |

**Map 6.4: Comparative Google imagery for Kadagathur Lake**




**Map 6.5: The zone of influence around the Kasagathur lake.**



**Thumbala Halli Lake**

**Lake Survey Number:** Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Thumbalahalli dam (Plate12).

1.2 Villages that surround the wetland include Narinalli, Devankottai, Gundiganalli, Thumbalahalli, Nariyanahalli and Pothanalli.

1.3 & 1.4 The lake is based in Karyamangalam taluka in Dharmapuri district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 18'03.7" N; 12° 18'03.0" N; 12° 18'06.7" 12° 18'13.3" N; 12° 18'09.7" and Longitude: 078° 09'16.5" E; 078° 09'12.2" E; 078° 09'14.5" E; 078° 09'11.3" E; 078° 09'18.9" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 88 hectares (Map 2).

2.2 The Wetland type - the wetland belongs to the Man- made (inland) tank category in the sub category seasonal intermittent tank there is no water for the past 10 years in full capacity and only the rainwater is collected that remains for four months. The Panchapalli dam that feed the dam is not supplying the water due to damaged channels.

2.3 Based on the secondary information the average depth is 4 meters for the wetland.

2.4 The elevation of the wetland is 467 to 475 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, panchapalli dam (no water now) the surrounding runoff form the catchment area and sewage.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater.
d) The pH of the water was 8.7.
e) The salinity of the lake was 285 ppt.
f) The wetland had aquatic vegetation like *Ipomoea carnea, Parthenium hysterophorus, Prosopis juliflora, Lantna camera*, grass sp. and other weeds that dominated the landscape i.e 80%.

2.6 Climatic setting

a) Rainfall for the month of August, 2018 in Dharmapuri was 0.00 mm.
b) The atmospheric temperature was 29.5°C and the humidity was 50 %

2.7 The area of zone of influence is 2246.44 hectares and with a fixed buffer area of 2 kms around the wetland (Map 6.8).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 90%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 6.7& 6.8.

**Section III- Biodiversity**

3.1 List of Plant species: 43 species of plants were recorded around the wetland during our visit (Table 6.7).

3.2 List of animal species: 48 animal species including 3 domestic species were recorded during the survey (Table 6.8a-g)

3.3 Species of Conservation importance: One Threatened species of birds was observed during the survey (Table 6.8a-g)

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Ipomoea sp, Lantana camara.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: The invasive species like *Tilapia sp.* and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture.
4.2 The plants around the wetland are not used for any medicinal purpose.
4.3 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.4 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.5 It is a major source of ground water recharge.
4.6 There is insignificant runoff form the surrounding area.
4.7 The wetland has a major temple along its vicinity and major cultural and religious activities are performed in the wetland.
4.8 The site adjoining the wetland is used majorly used by the locals for agriculture.
4.9 There are agriculture activities within the wetland.
4.10 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.11 The mining for sand or silt is undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water the overflow feeds the Satanur Dam if water is available.
6.2 The wetland has been facing land use change pressure, encroachment and garbage dumping.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a protected area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly due to agriculture activities and solid waste dumping and plastic pollution. During the time of our visit, there were several cement bags that were being washed in the wetland adding to the pollutants.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The growing agriculture activities need to be regulated as this is increasing due to absence of water for over 15 years.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no literature available for Tumbala Hali Dam

Table 6.7: List of Plants recorded along the Tumbala Halli Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 3 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Caesalpinia pulcherrima* | Peacock Flower, Pride of Barbados, Dwarf poinciana | Mayurkonrai | Fabaceae | Native | |
| 7 | *Delonix regia* | Flame Tree | | Fabaceae | Invasive | LC |
| 8 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 9 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 10 | *Senna tora* | Stinking Cassia, Chinese senna, Foetid cassia,Java bean, Low senna,Peanut weed, Sickle senna, Sicklepod | Senavu | Fabaceae | Native | NA |
| 11 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 12 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 13 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 14 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 15 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 16 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 17 | *Spermacoce pusilla* | Tiny False Buttonweed, Erect False Button weed | | Rubiaceae | Native | NA |
| 18 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 19 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 20 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 21 | *Catharanthus roseus* | Periwinkle, Madagascar periwinkle, Rosy periwinkle, Vinca | | Apocynaceae | Introduced | NA |
| 22 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 23 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 24 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 25 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 26 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 27 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 28 | *Solanum violaceum* | Indian Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 29 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 30 | *Barleria strigosa* | Barleria terminalis | Nilamparam | Acanthaceae | Native | NA |
| 31 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 32 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 33 | *Mesosphaerum suaveolens* | American mint, Bush mint, Chan, Horehound, Pignut, Stinking roger, Wild spikenard | | Lamiaceae | Naturalized | NA |
| 34 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 35 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 36 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 37 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 38 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 39 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 40 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 41 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 42 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 43 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 6.8a: List of Insects recorded along the Tumbala Halli Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 6 | Pharaoh Ant | *Monomorium pharaonis* | Formicidae |
| 7 | Flesh Fly | *Sarcophagidae* | Sarcophagidae |

Table 6.8b: List of Butterflies recorded along the Tumbala Halli Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 2 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 6.8c: List of Odonates recorded along the Tumbala Halli Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 6.8d: List of Fishes recorded form the Tumbala Halli Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 7 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 6.8e: List of Reptiles recorded along the Tumbala Halli Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 6.8f: List of Birds recorded along the Tumbala Halli Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 6 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 7 | Little Ringed Plover | *Charadrisu dubius* | Charadriidae | Least Concern |
| 8 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 9 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 10 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 11 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 12 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 13 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 14 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 15 | Oriental skylark | *Alauda gulgula* | Alaudidae | Least Concern |
| 16 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 17 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 18 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 19 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 20 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 21 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

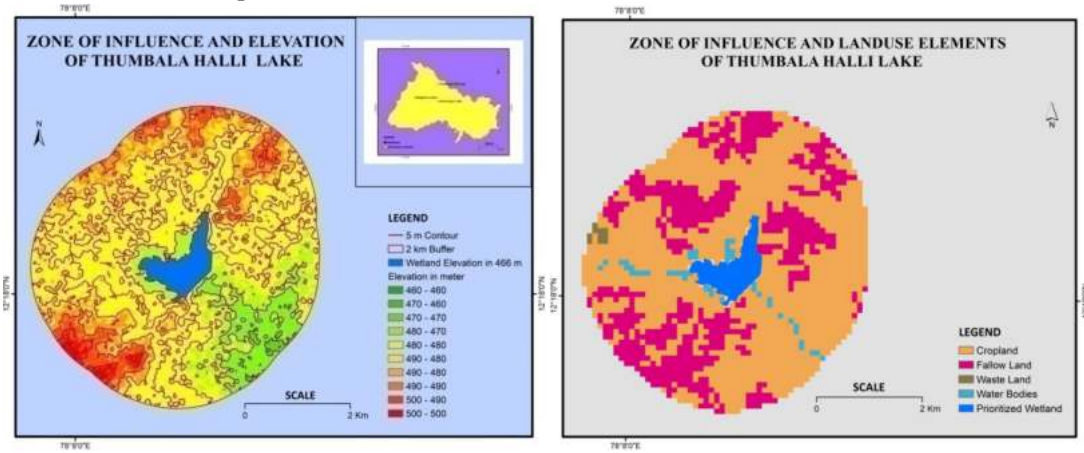
Table 6.8g: List of Mammals recorded along the Tumbala Halli Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 6.6: Comparative Google imagery for Thumbala Halli Lake**




**Map 6.7: The zone of influence around the Thumbala Halli lake.**



**Dindigul district**

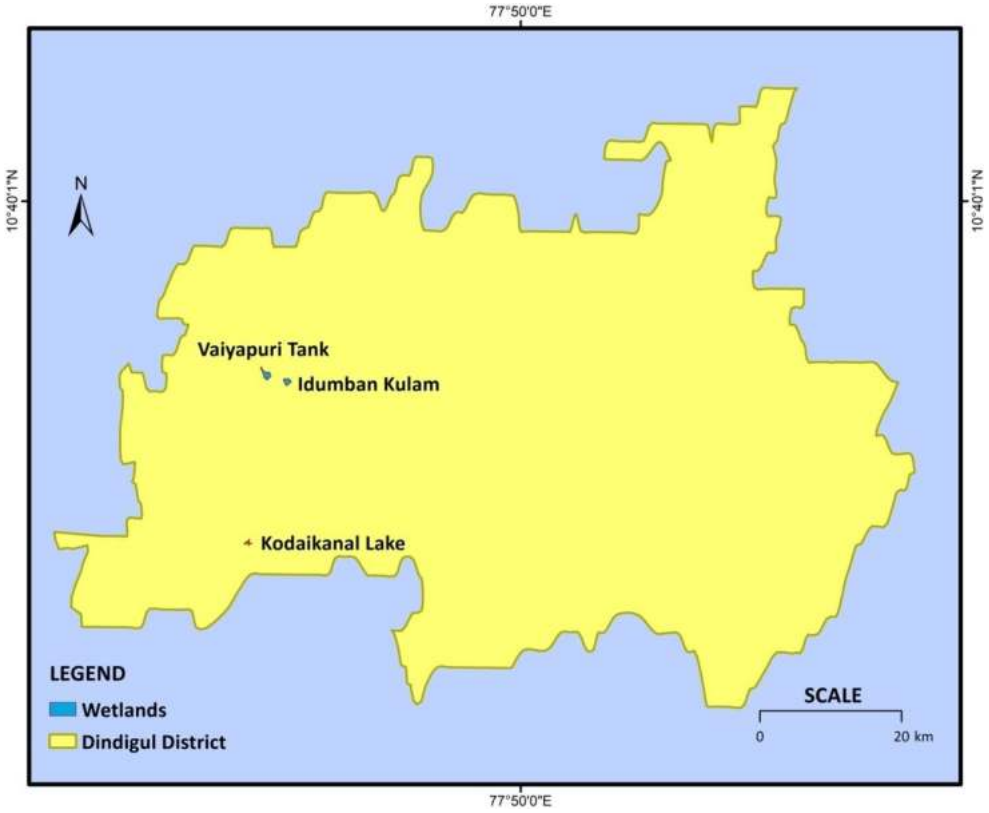
## 1. Introduction

**Dindigul district** is was carved out of Madurai District in 1985. It has an area of 6266.64 km$^2$. Dindigul district is bound by Erode, Coimbatore, Karur and Trichy districts on the North, by Sivaganga and Tiruchi District on the East, by Madurai district on the South and by Theni and Coimbatore Districts and Kerala State on the West.

Numerous temples, mosques and churches are found in Dindigul and there is increased religious tourism in the district.

Total area under wetland is 13815 ha, which includes 964 small wetland (<2.25 ha). Tanks/Ponds occupies 46.08% of wetland area. Other wetland types are Lakes/Ponds (3481 ha), Reservoirs (8.81 %) and River/Stream (12.94 %).

The wetland was selected for the present study based on the available references on religious importance for the Vaiyapuri wetland (Map 7.1). The other two wetlands were selected on the basis of secondary information and google imagery.




**Map 7.1: Wetlands of Dindigul District Assessed for Prioritization**

### Observations

Of the three wetlands selected in the district, Vaiyapuri is the largest while Kodaikanal is the smallest of the three wetlands. Around the three wetlands, we recorded 104 plant species both aquatic and terrestrial including 16 invasive species (Table 2.1). The faunal components totaled 107 species with the representation of 43 bird species including the wetland birds. The field study revealed that Vaiyapuri was Eutrophic with high levels of phosphorus while Idumban Kulam were Mesotrophic, the Kodaikanal wetland was Oligotrophic in status (Table

2.2). The soil form Vaiyapuri was not accessible hence soil characteristics for the other two wetlands were assessed.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Elandaikudam wetland. Mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Vaiyapuri Tank
2. Idumban Kulam
3. Kodaikanal Lake

Table 7.1: The flora and fauna recorded form the wetlands of Dindigul District

| S. No | Name of the Wetland | Plants (Invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Vaiyapuri Tank | 46 (9) | 6 | 6 | 13 | 2 | 14 | 0 | 1 | 20 | 5 |
| 2 | Kodaikanal Lake | 33 (3) | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 8 | 2 |
| 3 | Idumban Kulam | 49 (9) | 10 | 8 | 7 | 1 | 5 | 0 | 1 | 29 | 4 |
| | Total | 104 (16) | 12 | 9 | 17 | 2 | 16 | 0 | 1 | 43 | 5 |

Table 7.2: The water and soil quality assessed form the wetlands of Dindigul District

| **District Name** | Dindigul | Dindigul | Dindigul |
|---|---|---|---|
| **Wetland Name** | Idumban Kulam | Kodaikanal Lake | Vaiyapuri Tank |
| **Wetland Area** | 71.5 | 25.4 | 103 |
| **Buffer Area in Hectare (ha)** | 1941.91 | 1887.75 | 2289.71 |
| **Air Temperature °C** | 32 | 17.5 | 28.4 |
| **Water Temperature °C** | 30.9 | 20.1 | 26.8 |
| **Humidity %** | 50 | 63 | 52 |
| **Nutrients in Water** | Mesotrophic | Oligotrophic | Eutrophic |
| **Water pH** | 8.51 | 8.34 | 6.5 |
| **Water TDS ppm** | 1050 | 150 | 156 |
| **Water Conductivity ppm** | 768 | 118 | 625 |
| **Light Penetration cms** | 43 | 143 | 5 |
| **Water Salinity ppt** | 0.038 | 0.084 | 0.120 |
| **DO mg/L** | 8.84 | 8.49 | 5.49 |
| **PO4P mg/L** | 0.032 | 0.055 | 0.044 |
| **Water Na ppm** | 2024 | 2462 | 158 |
| **Water K ppm** | 7.2 | 4.95 | 26.75 |
| **Water Li ppm** | 0.65 | 0.7 | 0.3 |
| **Water Ca ppm** | 80.65 | 72.7 | 24.1 |
| **Soil Colour code** | 10YR 6/6 | 10YR 3/3 | |
| **Soil Colour** | Brownish Yellow | Dark Brown | soil was not accessible |
| **Soil pH** | 7.23 | 6.83 | |
| **Soil TDS ppm** | 188 | 52.2 | |
| **Soil Conductivity ppm** | 264 | 73.6 | |
| **Soil Salinity ppt** | 0.128 | 0.04 | |
| **Soil Na ppm** | 5.6 | 2.1 | |
| **Soil K ppm** | 3.5 | 5.6 | |
| **Soil Li ppm** | 0 | 0.1 | |
| **Soil Ca ppm** | 17.4 | 4.8 | |

**KodaiKanal Lake**

Kodaikanal is one of the best hill stations of Tamil Nadu and Kodaikanal lake is one of the main tourist attraction. The lake was formed during 1863 by the then collector of Madurai District Sir Venci Henry Levin.

**Lake Survey Number:** Ward B, Block 13 TS-3, RS no 234

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Kodaikanal lake (Plate 13).

1.2 Villages that surround the wetland include Kodaikanal town that comprises of Gymkhana road, lower shola road, Bombay Shola, Bryan park road, Club road, Observatory road and Old Convent road.

1.3 & 1.4 The lake is based in Kodaikanal in Dindigul district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 14'03.7" N; 10° 13'47.2" N; and Longitude: 077° 29'14.5" E; 077° 29'14.2" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of KodaiKanal Municipal Corporation of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 25.4 hectares (Map 7.3).

2.2 The Wetland type - the wetland belongs to the Manmade (inland) tank category in the sub category Permanent tank.

2.3 Based on the secondary information the average depth is 2 to 7 meters for the wetland.

2.4 The elevation of the wetland is 2091 to 2093 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is permanent in nature.
c) The water form the wetlands help in replenishing the groundwater and the overflow joins the Palar dam.
d) The pH of the water was between 7.72 and 9.0.
e) The salinity of the lake was 0.084 ppt.
f) The wetland is Oligotrophic and is dominated by submerged and emergent hydrophytes like hydrilla, water lilies etc. almost 50 %.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Dindigul was 12.6 mm.
b) The atmospheric temperature varied between 17.5°C and 19.5°C and the humidity was 63 and 90.3 %

2.7 The area of zone of influence is 1887.75 hectares with a fixed buffer area of 2 kms around the wetland (Map 7.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 15%; | Grasslands/scrublands 0%; |
| Agricultural lands 05%; | Settlements (rural) 0% |
| Settlements (Urban) 80%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2013 and 2018 is given in Map 7.2 & 7.3.

**Section III- Biodiversity**

3.1 List of Plant species: 32 species of plants were recorded around the wetland during our visit (Table 7.3).

3.2 List of animal species: 15 animal species including 2 domestic species were recorded during the survey (Table 7.4a-d).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 7.4a-d).

3.4 Major Plant invasive alien species and extent of invasion: Three invasive plants including *Oxalis sp., Lantana camara, and Gomphrena sp.* formed nearly major of the vegetation cover around the lake.

3.5 Major animal invasive alien species and extent of invasion: No invasive species were recorded. Fishing is undertaken and is under the control of the Fisheries department.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture and drinking at the downhill region. The township gets its drinking water form the borewells.

4.2 The overflow water feeds the agricultural lands and the Palar dam.

4.3 Fishery is not undertaken for commercial purpose, but some amount of recreational fishery is undertaken.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding area.

4.10 The wetland has a high tourism pressure that uses the lake for recreational purposes.

4.11 The site adjoining the wetland is used majorly used by tourist and thesewage and effluents form the surrounding hotels and residential areas is released into the lake.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded a few bird species during our survey.

4.14 The wetland does support local fish species.

4.15 There is no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken as a commercial activity.

5.2 There is no agriculture undertaken within the wetland.

5.3 The locals are aware of the importance of the wetland but there are no major encroachment issues.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure.

6.3 The wetland water quality and the ecological character are changing rapidly due to lack of conservation measures.

6.4 Encroachment along the wetland is high.

**Section VII Notification Category**

The wetland is conserved under the NLCP, it is not a protected area.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form the unregulated tourism that is impacting the the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Tourism needs to be regulated and encouraged to practice conservation measures.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published literature available for the Kodaikanal Lake

Balamurugan P. (2015) Study on Rate of Sedimentation and Evaluation of Toxic Elements Sequester Trend and its Geospatial distribution in Kodaikan al Lake sediments, Tamil Nadu, India. Ph.D. Thesis, Anamalai University, Tamil Nadu.

Balamurugan P., Vasudevan S., Singhal R.K., Ramkumar T., R. Selvaganapathi and Nishikant C.V. (2015) Spatial assessment of heavy metal contamination in sediments of Kodaikanal Lake, Tamil Nadu, India. International Journal for research in Applied Science and Engineering Technology Vol. 3 (4): 805-

Gadgil M., Daniels R.J.R., Gandshaiah K.N., Prasad S.N., Murthy M.S.R., Jha C.S., Ramesh B.R. and Subramanian K.A. (2011) Mapping ecologically sensitive, significant and salient areas of Western Ghats: proposed protocols and methodology. Current Science 100: 175–182.

Karthick B. and Kociolek J.P. (2011) Four new centric diatoms (Bacillariophyceae) form the Western Ghats, South India. Phytotaxa 22: 25–40

Neelakantan K.S. (2008) Conservation and restoration of lakes in Tamil Nadu. In Sengupta M. and Dalwani R eds. Proceedings of TAAL 2007: The 12th World lake Conference. 1669-1671.

Rajakumar S., Shanthi K., Ayyasamy P.M., Velmurugan P. and Lakshmanaperumalsamy P. (2006) Limnological studies of Kodaikanal lake in Tamil Nadu, India. Nature Environment and Pollution Technology. Vol 5(4): 533 -544.

Rajamanickam R.and Nagan S. (2016) A Study on Water Quality Status of Major Lakes in Tamil Nadu. International Journal of Research in Environmental Science. Vol 2(2): 9-21

Table 7.3: List of Plants recorded along the Kodaikanal Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nymphaea nouchali* | Blue water lily, | Neelambal | Nymphaeaceae | Native | LC |
| 2 | *Nymphaea alba* | Nilofar, White water lily | Neytarkilanku, | Nymphaeaceae | Native | LC |
| 3 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 4 | *Oxalis corniculata* | Creeping Wood Sorrel | Puliyarai, Paliakiri | Oxalidaceae | Invasive | NA |
| 5 | *Canavalia cathartica* | Wild Sword Bean | Segapputampattai | Fabaceae | Native | NA |
| 6 | *Erythrina suberosa* | Indian Coral Tree | Kincukam, | Fabaceae | Native | |
| 7 | *Fragaria vesca* | Himalayan Strawberry | | Rosaceae | Native | |
| 8 | *Rubus ellipticus* | Yellow Himalayan Raspberry | Lalanchu, Hinsal | Rosaceae | Native | |
| 9 | *Corymbia citriodora* | Lemon Scented Gum, | | Myrtaceae | Introduced | |
| 10 | *Passiflora edulis* | Passion Fruit, | | Passifloraceae | Introduced | |
| 11 | *Hydrangea macrophylla* | Hydrangea, | | Hydrangeaceae | Introduced | |
| 12 | *Argyranthemum gracile* | Marguerite Daisy | | Asteraceae | Introduced | |
| 13 | *Bellis perennis* | English Daisy, Lawn Daisy | | Asteraceae | Naturalized | |
| 14 | *Xerochrysum bracteatum* | Paper daisy, Strawflower | | Asteraceae | Introduced | |
| 15 | *Asclepias curassavica* | Scarlet Milkweed, | | Apocynaceae | Naturalized | |
| 16 | *Ipomoea purpurea* | Common Morning Glory | | Convolvulaceae | Naturalized | |
| 17 | *Brugmansia suaveolens* | Angel's trumpet | Madulam | Solanaceae | Naturalized | EW |
| 18 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 19 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 20 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 21 | *Alnus nepalensis* | Nepal Alder, Indian Alder | | Betulaceae | Native | LC |
| 22 | *Hydrilla verticillata* | Water Thyme, hydrilla | amiranappaci, | Hydrocharitaceae | Native | LC |
| 23 | *Canna indica* | Indian Shot, Wild canna | | Cannaceae | Naturalized | NA |
| 24 | *Crinum powellii* | Cape lily | | Amaryllidaceae | Introduced | |
| 25 | *Alstroemeria pelegrina* | | | Alstroemeriaceae | Introduced | |
| 26 | *Cyanotis arachnoidea* | Grass of the Dew | Vallukkai | Commelinaceae | Native | NA |
| 27 | *Cyanotis tuberosa* | Sahyadri Dew-Grass | Neerpulli | Commelinaceae | Native | NA |
| 28 | *Aponogeton natans* | Floating Lace Plant | Kotti kizhangu | Aponogetonaceae | Native | LC |
| 29 | *Schoenoplectiella mucronata* | | | Cyperaceae | Native | LC |
| 30 | *Brachiaria ramosa* | Browntop Millet | Pala pul | Poaceae | Native | LC |
| 31 | *Nephrolepis cordifolia* | | | Nephrolepidaceae | Introduced | |
| 32 | *Nephrolepis exaltata* | Boston Fern | | Nephrolepidaceae | Introduced | |

EW (Extinct in the Wild) VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 7.4a: List of insects recorded along the KodaiKanal Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |

Table 7.4b: List of Fishes recorded form the KodaiKanal Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 2 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 3 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 4 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |

Table 7.4c: List of Birds recorded along the KodaiKanal Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 3 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 4 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 5 | Red-whiskered Bulbul | *Pycnonotus jocosus* | Pycnonotidae | Least Concern |
| 6 | Jungle Myna | *Acridotheres fuscus* | Sturnidae | Least Concern |
| 7 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 8 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

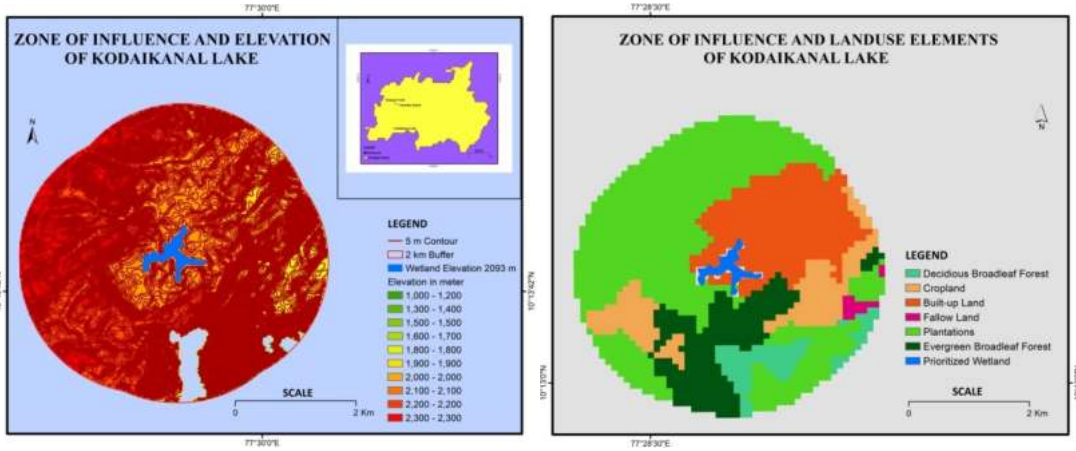
Table 7.4d: List of Mammals recorded along the KodaiKanal Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Horse | *Equus ferus caballus* | Equidae | Domestic |

**Map 7.2: Comparative Google imagery for Kodaikanal Lake**




**Map 7.3: The zone of influence around the Kodaikanal Lake.**



**Idumban Kulam**

**Lake Survey Number:** 879

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Idumban Kulam (Plate 13).

1.2 Villages that surround the wetland include Sivagiri patti, Merkuaayakudi and Palani town.

1.3 & 1.4 The lake is based in Palani Taluk in Dindigul district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 26'28.5" N; 10° 26'28.6" N; 10° 26'19.1" N; and Longitude: 077° 31'54.8" E; 077° 31'55.9" E; 077° 31'55.4" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 71.5 hectares (Map 2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 2.5 to 10 meters for the wetland.

2.4 The elevation of the wetland is 327 to 330 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and Barathama nadi dam's indirect influence.
b) The water in the wetland is intermitant in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow joins the Vaiyapuri tank.
d) The pH of the water was between 8.34 and 8.51.
e) The salinity of the lake was 0.038 ppt.
f) The wetland is mesotrophic and is dominated by algae,
f) The wetland had *Ipomoea aquatica,* lotus and lilies dominated the landscape i.e 70%.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Dindigul was 12.6 mm.
b) The atmospheric temperature varied between 30.9°C and 32.1°C and the humidity was 47 and 52 %

2.7 The area of zone of influence is 321 hectares and varies between 0.07 to 1.09 kms (Map 7.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial % |

2.9. The comparison of the wetland for the years 2004 and 2018 is given in Map 7.4& 7.5.

**Section III- Biodiversity**

3.1 List of Plant species: 45 species of plants were recorded around the wetland during our visit (Table 7.5).

3.2 List of animal species: 64 animal species including 4 domestic species were recorded during the survey (Table 7.6a-h)

3.3 Species of Conservation importance: Three Threatened species of birds were observed during the survey (Table 7.6a-h)

3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Prosopis juliflora*, *Parthenium sp,*, *Althandnthra sp.,* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Two invasive species were recorded. Fishing is undertaken and is under the control of the PWD.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture. The municipal corporation provides drinking water form the palaru dam Bardhama nadi at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the agricultural lands.
4.3 Fishery is not undertaken for commercial purpose, but some amount of recreational fishery is undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is insignificant runoff form the surrounding area.
4.10 The wetland has a major Idumban temple along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is used majorly used by the religious tourist for dumping garbage, release of sewage and effluents and as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken as a commercial activity.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are aware of the importance of the wetland but there are no major encroachment issues.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character are changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a protected area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form the unregulated tourism that is impacting the the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Tourism needs to be regulated and encouraged to practice conservation measures.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for**

There is no literature available for Idumban Kulam

Table 7.5: List of Plants recorded along the Idumban Kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 3 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Ceiba pentandra* | Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 6 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 7 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 10 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 11 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 14 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 15 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 16 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 17 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 18 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 19 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 20 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 21 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 22 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 23 | *Gymnema sylvestre* | Cowplant | Cirukurinchchan | Apocynaceae | Native | NA |
| 24 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 25 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 26 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 27 | *Datura stramonium* | Common Thorn apple | Oomathai | Solanaceae | Native | NA |
| 28 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 29 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, | Martyniaceae | Native | NA |
| 30 | *Justicia tranquebariensis* | Tarangambadi Justicia | Punnaku Poodu, | Acanthaceae | Native | |
| 31 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 32 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 33 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 34 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 35 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 36 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 37 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 38 | *Euphorbia antiquorum* | Triangular Spurge, | Chaturakalli, | Euphorbiaceae | Native | |
| 39 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 40 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 41 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 42 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 43 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 44 | *Eleusine indica* | Indian crowfoot grass | Thippa ragi, Keveru | Poaceae | Native | LC |
| 45 | *Enteropogon dolichostachyus* | Finger grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 7.6a: List of Insects recorded along the Idumban Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Grasshopper species | *Criotettix bispinosus* | Tetrigidae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 5 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 6 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 7 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 8 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 9 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 10 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 7.6b: List of Butterflies recorded along the Idumban Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | African Marbled Skipper | *Gomalia elma* | Pyrginae | Uncommon |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 4 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

| | | | | |
|---|---|---|---|---|
| 6 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 7 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |

Table 7.6c: List of Odonata recorded along the Idumban Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |
| 7 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |
| 8 | Greater Crimson Glidder | *Urothemis signata* | Libellulidae | Common |

Table 7.6d: List of Arachnida recorded along the Idumban Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 7.6e: List of Fishes recorded form the Idumban Kulam

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 4 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 7.6f: List of Reptiles recorded along the Idumban Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

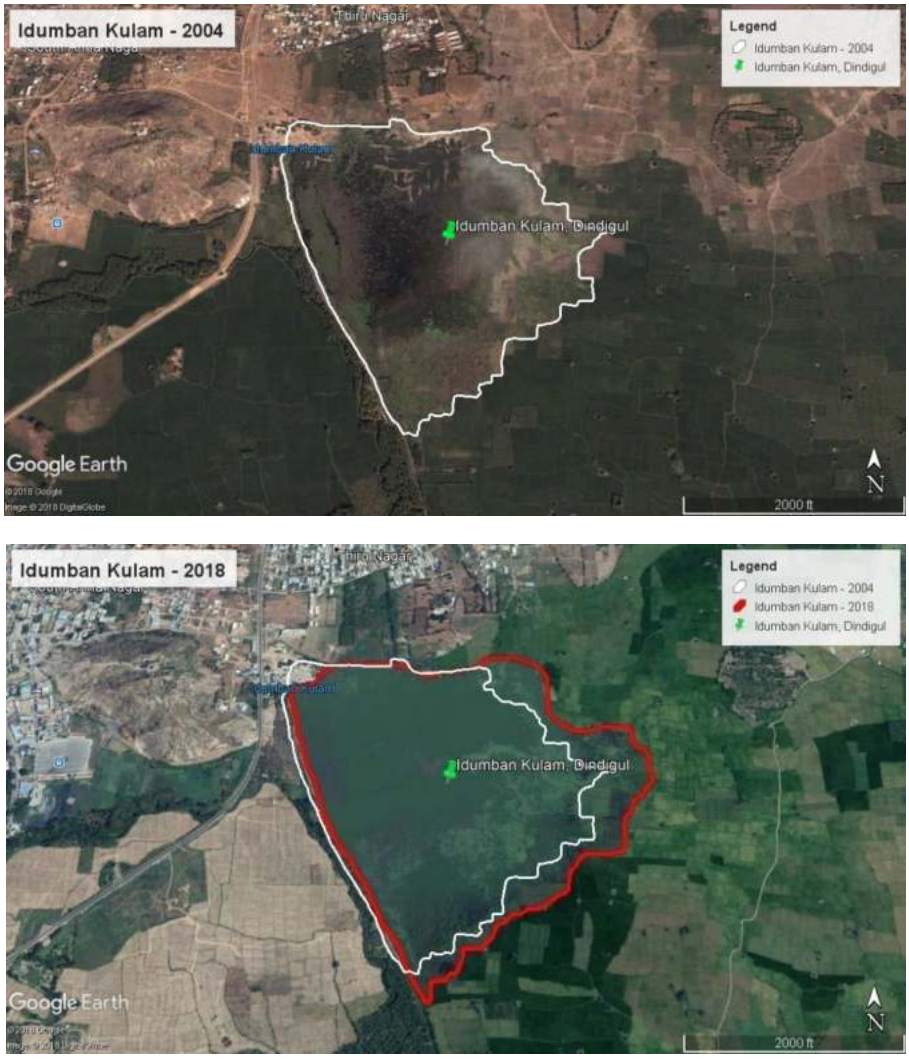
Table 7.6g: List of Birds recorded along the Idumban Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 4 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 5 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 6 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 7 | Eurasian Spoonbill | *Platalea leucorodia* | Threskiornithidae | Least Concern |
| 8 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 12 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 13 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 14 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 15 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 16 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 17 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 18 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 19 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 20 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 21 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 22 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 23 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 24 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 25 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 26 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 27 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 28 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 29 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

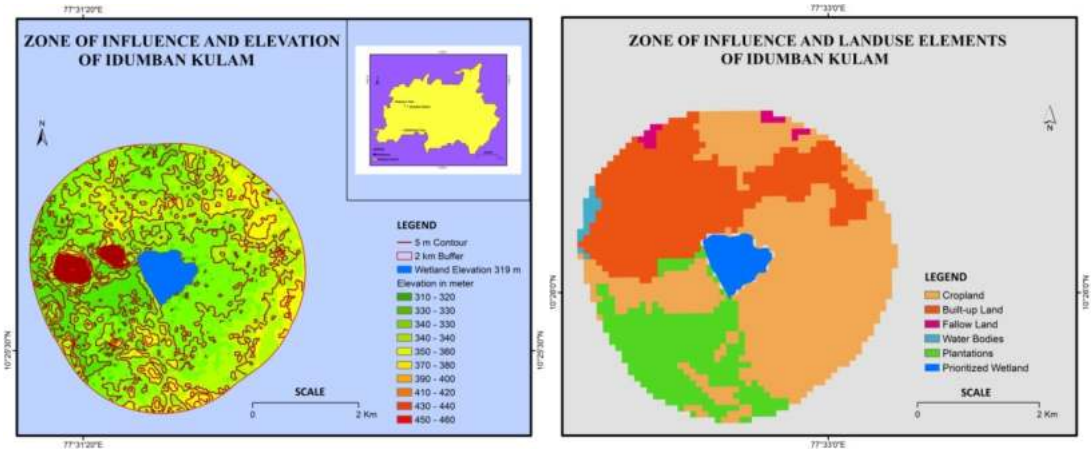
Table 7.6h: List of Mammals recorded along the Idumban Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Horse | *Equus ferus caballus* | Equidae | Domestic |

**Map 7.4: Comparative Google imagery for Idumban Kulam**




**Map 7.5: The zone of influence around the Idumban Kulam.**



**Vaiyapuri tank**

Vaiyapuri Lake is the Theertham associated with the Palani Murugan temple. Vaiyapuri Lake is connected to Shanmuga Nadhi (River). Shanmuga Nadhi is also considered as one of the Theerthams associated with Palani Murugan temple. Vaiyapuri lake is situated at Palani, Dindukal district. The lake water is used for irrigation purpose.

**Lake Survey Number:** 836/ 1A1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Vaiyapuri kulam or Palani Kulum (Plate 14).

1.2 Villages that surround the wetland include Palani, Balasamuthiram, Sanmuganathi, Dr. Ansari street and Madina nagar.

1.3 & 1.4 The lake is based in Dindigul district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 26'59.8" N; 10° 27'04.7" N; 10° 27'04.0" N; 10° 26'55.6" N; 10° 26'47.9" N; and Longitude: 077° 30'44.9" E; 077° 30'24.3" E; 077° 30'16.9" E; 077° 30'19.0" E; 077° 30'23.4"

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 103 hectares (Map 7.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 3.5 meters for the wetland.

2.4 The elevation of the wetland is 10 to 11 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and Barathamalai dam's indirect influence.
b) The water in the wetland is intermitant in nature.
c) The water form the wetlands help in replenishing the groundwater and the overflow joins the Noyyal River.
d) The pH of the water was 6.5.
e) The salinity of the lake was 0.120 ppt.
f) The wetland had *Ipomoea, Eichornea crassipes, Prosopis Juliflora* and other weeds that dominated the landscape i.e 90%.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Dindigul was 12.6 mm.
b) The atmospheric temperature varied between 28.2°C and 28.4 and the humidity was 52 %

2.7 The area of zone of influence is 262 hectares with a fixed buffer area of 2 kms around the wetland (Map 7.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 50%; | Settlements (rural) 0%; |
| Settlements (Urban) 50%; | Industrial 0%. |

2.9. The comparison of the wetland for the years 2007 and 2011 is given in Map 7.6 & 7.7.

**Section III- Biodiversity**

3.1 List of Plant species: 42 species of plants were recorded around the wetland during our visit (Table 7.7).

3.2 List of animal species: 67 animal species including 5 domestic species were recorded during the survey (Table 7.8 a-h).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 7.8 a-h)
3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Prosopis juliflora*, *Eichorinea carssipes* and *Ipomoea sp.*formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Fishing is not undertaken as the wetland is covered with a thick mat of *Eichorinea sp*.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the agricultural lands.
4.3 Fishery is not undertaken for commercial purpose, but some amount of recreational fishery is undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose. The borassus plant sap is also collected for local consumption and sale in the local market.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has a major Palani temple along its vicinity and major cultural and religious activities are performed in the wetland. The surrounding area of the wetland is heavily encroached upon.
4.11 The site adjoining the wetland is used majorly used by the locals for dumping garbage, release of sewage and effluents and as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are not aware of the importance of the wetland and the locals are heavily encroaching into the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character are changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a protected area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water. The local municipality has encroached into the wetland and constructed the bus stand with the approval of the PWD.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for**

Thenmozhi R., Malathi R. and Shoba B. (2014) Ecosystem approach for restoration of polluted tanks, Poll Res. 33 (1) : 127-131, 2014, Article-19, PR – P- 736, ISSN 0257–8050.

Table 7.7: List of Plant species recorded along the Vaiyapuri Tank

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, | Malvaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 8 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Albizia saman* | Rain Tree | Thoongumoonji maram | Fabaceae | Exotic | NA |
| 11 | *Canavalia cathartica* | Wild Sword Bean | Segapputampattai | Fabaceae | Native | NA |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 15 | *Carica papaya* | Papaya Tree | Papali maram | Caricaceae | Native | DD |
| 16 | *Citrullus colocynthis* | Bitter Apple, Bitter cucumber, | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 17 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 18 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 19 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 20 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 21 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 22 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 23 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 24 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 25 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 26 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 27 | *Solanum nigrum* | Black nightshade | Manathakkali | Solanaceae | Native | NA |
| 28 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 29 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 30 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 31 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 32 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 33 | *Alternanthera philoxeroides* | Alligator Weed | | Amaranthaceae | Invasive | NA |
| 34 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 35 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 36 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 37 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 38 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 39 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 40 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 41 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 42 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 7.8a: List of Insects recorded along the Vaiyapuri Tank

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 6 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 7.8b: List of Butterflies recorded along the Vaiyapuri Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 8 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 9 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 10 | Dark-Brand Bushbrown | *Mycalesis mineus* | Satyrinae | Common |
| 11 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 12 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 13 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 7.8c: List of Dragonflies recorded along the Vaiyapuri Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Greater Crimson Glider | *Urothemis signata* | Libellulidae | Common |

Table 7.8d: List of Arachnida along the Vaiyapuri Tank

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 7.8e: List of Fishes recorded form the Vaiyapuri Tank

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 9 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 10 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 11 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 12 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 13 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 14 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 7.8f: List of Reptile recorded along the Vaiyapuri Tank

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

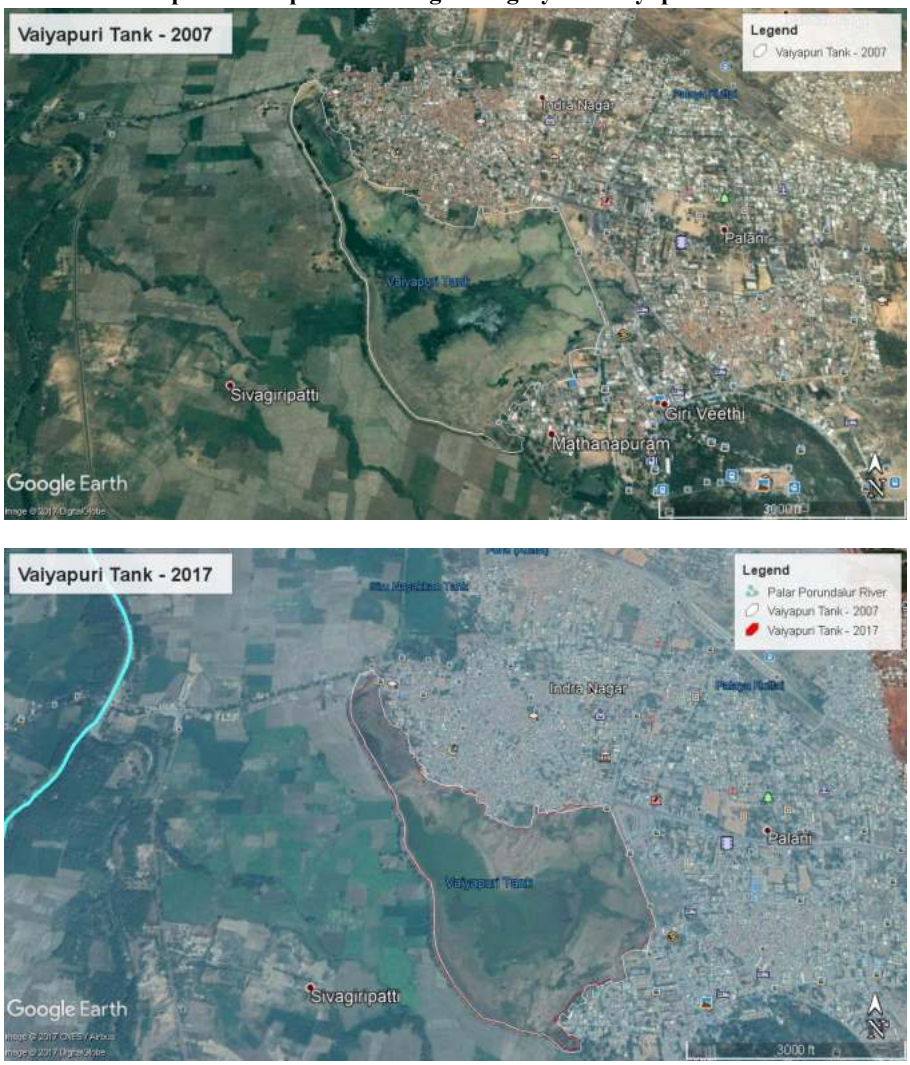
Table 7.8g: List of Birds recorded along the Vaiyapuri Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 7 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 8 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 9 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 10 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 11 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 12 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 13 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 14 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 15 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 16 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 17 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 18 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 19 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 20 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

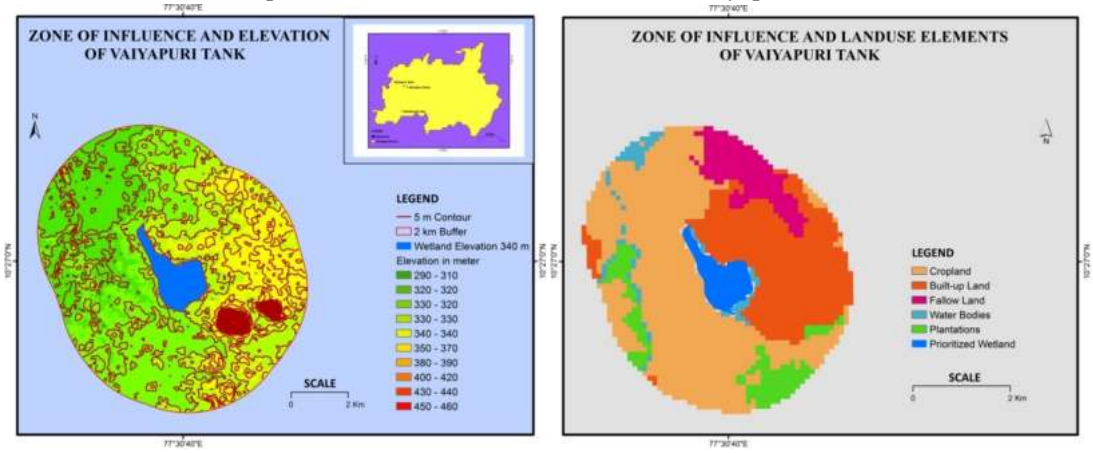
Table 7.8h: List of Mammals recorded along the Vaiyapuri Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Horse | *Equus ferus caballus* | Eqidae | Domestic |
| 5 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |

**Map 7.6: Comparative Google imagery for Vaiyapuri Tank**




**Map 7.7: The zone of influence around the Vaiyapuri Tank**



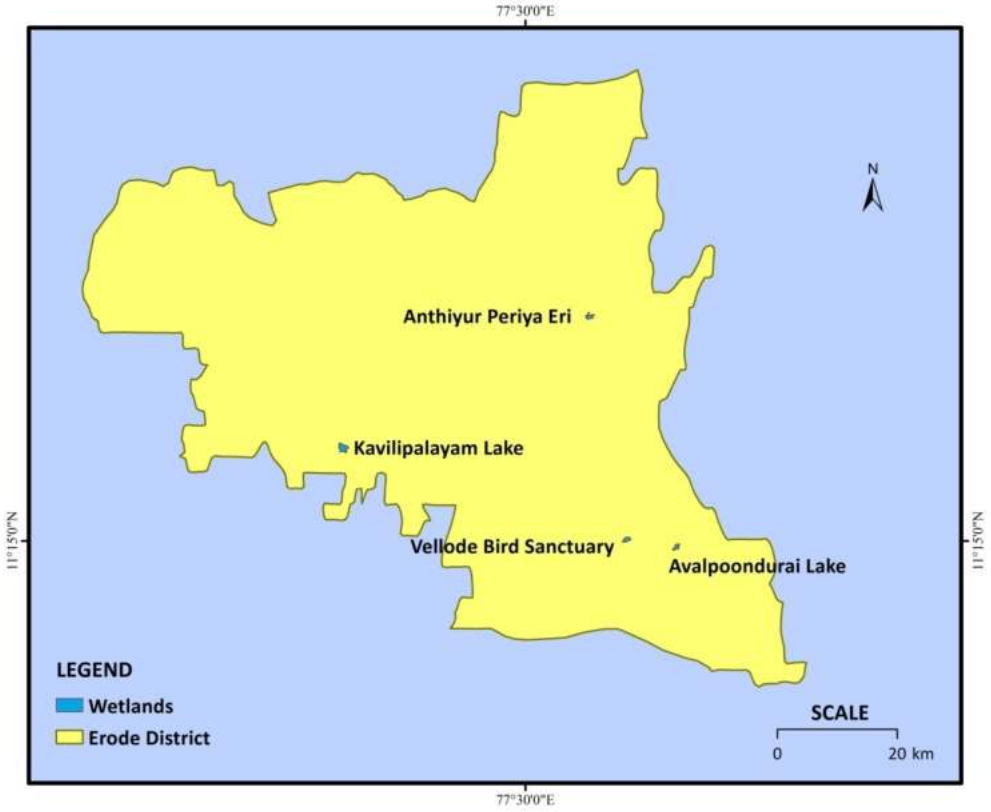
## Erode District

### 1. Introduction

Erode District is lying on the extreme north of the state. It is bounded mostly by Karnataka State and also River Palar covers long distance. To the East lies Namakkal and Karur Districts. Dindigul District is its immediate neighbor to the South and on the West; it has Coimbatore and Nilgiri Districts, as its boundaries. Thus Erode District is essentially a land-locked area having no sea-cost of its own.

Erode is blessed with a huge area under forests covers. Approximately 2287 km² of land is under dense forest. Total geographic area of Erode is 8161.91 km². Total area under wetland is 13570 ha, which includes 397 small wetland (<2.25 ha). Major wetland types of the district are Reservoirs (51.35 %), River/Stream (34.30 %) and Tanks/ponds (7.77 %).

SACON during 2004 had prioritized two wetlands form Erode district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these two wetlands to assess its present potential for conservation. (Map 8.1). The other two wetlands were selected on the basis of google imagery and internet portal.




**Map 8.1: Wetlands of Erode district assessed for Prioritization**

### Observations

Of the fivewetlands selected in the district, Kavilipalayam Lake is the largest while Avalpoondurai Lake is the smallest wetland. Around the four wetlands, we recorded 177 plant species both aquatic and terrestrial including 16 invasive species (Table 8.1). The faunal components totaled 127 species with the representation of 42 bird species including the wetland birds. The field study revealed that Vellode Bird Sanctuary was Mesotrophic

while Anthiyur and Kavilipalayam lake was Oligotrophic in status (Table 8.2). Avalpoondurai wetland was dry during our visit and the locals informed that the wetlandhas been dry for over five years. The soil characteristics for the wetland showed that it still had the hydric quality and did provide some of the ecosystem services.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat and recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were mainly the encroachment by human settlement around the wetlands in addition to the sand mining, release of sewage, solid waste that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation

1. Avalpoondurai Lake
2. Anthiyur Periya Eri
3. Kavilipalayam Lake
4. Vellode Bird Sanctuary

Table 8.1: The flora and fauna recorded form the wetlands of Erode District

| S. No | Name of the Wetland | Plants (Invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Vellode Bird Sanctuary | 70 (9) | 13 | 14 | 16 | 2 | 12 | 0 | 2 | 33 | 4 |
| 2 | Aval poondarai Lake | 23 (10) | 2 | 4 | 5 | 0 | 0 | 0 | 2 | 16 | 3 |
| 3 | Kavilipalayam Lake | 45 (10) | 8 | 9 | 18 | 1 | 3 | 2 | 2 | 13 | 3 |
| 4 | Anthiyur Periya Eri | 45 (9) | 5 | 5 | 5 | 1 | 8 | 1 | 1 | 13 | 5 |
| | Total | 177 (16) | 19 | 15 | 25 | 2 | 15 | 2 | 2 | 42 | 5 |

Table 8.2: The water and soil quality assessed form the wetlands of Erode District

| District Name | Erode | | | |
|---|---|---|---|---|
| Wetland Name | Anthiyur Periya Eeri | Avalpoondurai Lake | Kavilipalayam Lake | Vellode Bird Sanctuary |
| Wetland area (ha) | 81.2 | 65.9 | 163 | 77.5 |
| Buffer Area in Hectare (ha) | 2152.88 | 2042.17 | 2375.6 | 2014.35 |
| Air Temperature °C | 33.8 | 38 | 33 | 30.4 |
| Water Temperature °C | 31.3 | | 30.4 | 30.2 |
| Humidity % | 41 | 45 | 50 | 41 |
| Nutrients in Water | Oligotrophic | not known | Oligotrophic | Mesotrophic |
| Water pH | 9.3 | | 8.65 | 8 |
| Water TDS ppm | 187 | | 181 | 130 |
| Water Conductivity ppm | 270 | | 255 | 494 |
| Light Penetration cms | 42 | | 42 | 96 |
| Water Salinity ppt | 0.13 | | 0.125 | 0.120 |
| DO mg/L | 2.54 | | 16.26 | 10.98 |
| PO4P mg/L | 0.010 | | 0.012 | 0.003 |
| Water Na ppm | 1292 | | 312 | 14.5 |
| Water K ppm | 12.7 | | 7.7 | 2.5 |
| Water Li ppm | 0.6 | | 0.2 | 0 |
| Water Ca ppm | 106.7 | | 98.1 | 11.9 |
| Soil Colour code | 10YR 4/6 | 10YR 5/8 | 7.5YR 3/4 | 10YR 4/4 |
| Soil Colour | Dark Yellowish Brown | Yellowish Brown | Dark Brown | Dark Yellowish Brown |
| Soil pH | 7.65 | 7.8 | 7.64 | 7.63 |
| Soil TDS ppm | 95.8 | 144 | 122 | 165 |
| Soil Conductivity ppm | 135.2 | 179.2 | 173.7 | 233 |
| Soil Salinity ppt | 0.067 | 0.087 | 0.085 | 0.112 |
| Soil Na ppm | 5.9 | 15.1 | 3.1 | 12.9 |
| Soil K ppm | 1.7 | 9.1 | 9.1 | 3.6 |
| Soil Li ppm | 0 | 0 | 0.1 | 0 |
| Soil Ca ppm | 8.5 | 22.1 | 16.3 | 15.7 |

**Anthiyur Periya Eri**

**Lake Survey Number:** Not provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Anthiyur Periya eri (Plate 15).

1.2 Villages that surround the wetland include Kollupalayam, Koochikallur, Pudhupalayam and Andhiyur.

1.3 & 1.4 The lake is based in Erode District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 35'07.0" N; 11° 34'59.5" N; 11° 35'03.8" N; 11° 35'07.0" N; and Longitude: 077° 35'40.0" E; 077° 35'41.2" E; 077° 35'37.7" E; 077° 35'39.3" E;

1.6 The wetland is not a Protected Area and is under the jurisdiction of PWD Tamil Nadu.

1.7 The wetland comes under the jurisdiction of PWD.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 81.2 hectares (Map 8.2).

2.2 The Wetland type - the wetlands in belong to the Natural (inland) category in the sub category intermitant seasonal lakes.

2.3 Based on the secondary information the average depth is 2.5 to 4 meters for the wetland.

2.4 The elevation of the wetland is 223to 236 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and Varathapallaum dam.

b) The water in the wetland is intermittent nature with some water is present only for a few weeks during the rains, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the wetland was half dry. The wetland used to get water through the Varathapallaum dam.

c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the Rajakullam eri and adjoining agriculture fields.

d) The pH of the water was 9.3.

e) The lake has fresh water as Salinity was 0.13 ppt.

f) The wetland was partially dry and the aquatic vegetation like Ipomoea and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of August, 2018 in Erode was 15.1 mm.

b) The atmospheric temperature was 33.8°C and the humidity was 41 %.

2.7 The area of zone of influence is 2152.88 hectares with a fixed buffer area of 2 kms around the wetland (Map 8.3).

2.8 The major land use around the wetland comprised of

Agricultural lands 85 %; Rural Settlements 15%.;
Grassland 0%; Industries 0%.

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 8.2 & 8.3.

**Section III- Biodiversity**

3.1 List of Plant species: 42 species of plants were recorded around the wetland during our visit (Table 8.3).

3.2 List of animal species: 34 animal species including 3 domestic species were recorded during the survey (Table 8.4 a-h).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 8.4 a-h).

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, formed major part of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the borewell water and Koothampatti eri water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The are farmlands where agriculture is undertaken around the wetland using borewell water.
4.3 Fishery is undertaken and PWD gives annual tenders.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is minimal runoff form the surrounding area as it is a water deficient area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present.
4.11 The site is used majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is commercial fishery.
4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There is mining for sand or silt on tender basis form the PWD.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 There is agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture or fishery purpose.
5.6 The wetland was faced drought for the past few years due to the presence of check dams.
5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow due to depleting water in the wetland.
6.2 The wetland has been facing drought condition for the past 5 years.

**Section VII Notification Category**

The wetland is not under any category and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Solid waste dumping is leading to the change in the wetland character.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available for Anthiyur Periya Eri

Table 8.3: List of Plants recorded along the Anthiyur Periya Eri

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Cocculus diversifolius* | | | Menispermaceae | Introduced | |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai | Malvaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 9 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 10 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 11 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 12 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 13 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 14 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 16 | *Glinus oppositifolius* | Jima | Thura poondu | Molluginaceae | Native | NA |
| 17 | *Spermacoce ocymoides* | Purple leaved button | | Rubiaceae | Native | LC |
| 18 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 21 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 22 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 23 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 24 | *Wrightia tinctoria* | Sweet indrajao, | Paalai | Apocynaceae | Native | LC |
| 25 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 26 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 27 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 28 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 29 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 30 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | Makilikkeerai, Pannaipoo | Amaranthaceae | Native | NA |
| 31 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 32 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 33 | *Euphorbia antiquorum* | Triangular Spurge | Chaturakalli, Kalli | Euphorbiaceae | Native | |
| 34 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 35 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 36 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 37 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 38 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 39 | *Cynodon dactylon* | Bermuda grass | | Poaceae | Invasive | NA |
| 40 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 41 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |
| 42 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 8.4a: List of Insects recorded along the Anthiyur Periya Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Mantis Egg | *Ootheca* | Mantodae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 8.4b: List of Butterflies recorded along the Anthiyur Periya Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 5 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |

Table 8.4c: List of Odonates recorded along the Anthiyur Periya Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 5 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 8.4d: List of Arachnida recorded along the Anthiyur Periya Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 8.4e: List of Amphibians recorded form the Anthiyur Periya Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |

Table 8.4f: List of Reptiles recorded along the Anthiyur Periya Eri

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

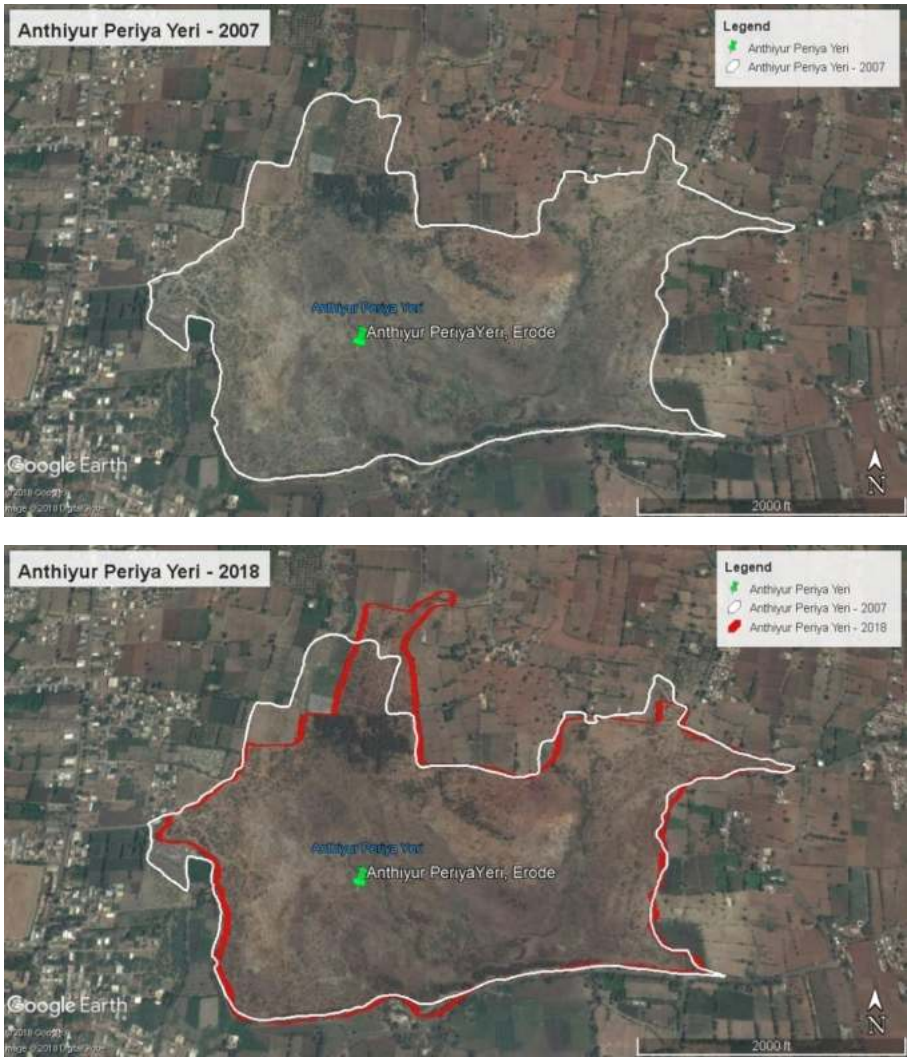
Table 8.4g: List of Birds recorded along the Anthiyur Periya Eri

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 6 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 7 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 8 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 9 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 10 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 11 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 12 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 13 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 14 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

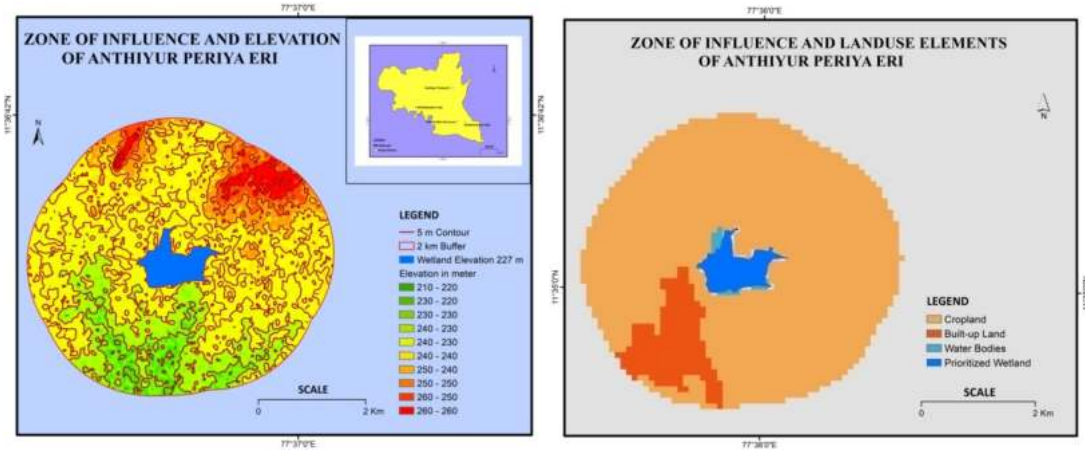
Table 8.4h: List of Mammals recorded along the Anthiyur Periya Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 8.2: Comparative Google imagery for Anthiyur Periya Eri**




**Map 8.3: The zone of influence around the Anthiyur Periya Eri**



**Avalpoonduri Lake**

Avalpoondurai is a part of Erode Taluk, in Erode District

**Lake Survey Number**: Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Avalpoonduri Lake (Plate 15).
1.2 Villages that surround the wetland include Avalpoonduri.
1.3 & 1.4 The lake is based in Erode District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 11° 14'32.7" N; 11° 14'31.7" N; and Longitude: 077° 43'26.1" E; 077° 43'26.2" E;
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD Erode division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 65.9 hectares (Map 8.4).
2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent lake. The wetland has water for only a few days during the rains. Afterwhich it becomes completely dry. At the time of our visit there was no water in the wetland and the terrain looked more like a desert.
2.3 Based on the secondary information the average depth is 5.0 meters for the wetland.
2.4 The elevation of the wetland is 217 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Bhavani River, However the waters for the Bhavani are not released any more into the wetland for the past 10 years.
   b) The water in the wetland is mostly of intermitant nature with a regularity of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
   c) The water also helps in replenishing the groundwater.
   d) The pH of the water was not recorded
   e) The lake has fresh water as per the locals
   f) The wetland was observed to be completely dry
2.6 Climatic setting
   a) Rainfall for the month of January in Erode was 15.1 mm.
   b) The atmospheric temperature and humidity was not recorded.
2.7 The area of zone of influence is 2042.17 hectares with a fixed buffer area of 2 kms around the wetland (Map 8.5).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland and Scrubland 15 %; |
| Agriculture 65%, | Settlements (rural) 30% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2009 and 2017 is given in Map 8.4 & 8.5.

**Section III- Biodiversity**

3.1 List of Plant species: 21 species of plants were recorded around the wetland during our visit (Table 8.5).
3.2 List of animal species: 32 animal species including 3 domestic species were recorded during the survey (Table 8.6 a-f).
3.3 Species of Conservation importance: One near Threatened specie of birds were observed during the survey (Table 8.6 a-f).
3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is notdocumented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around.
4.3 Fishery is not undertaken as the wetland does not have any water.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 Recreational garden and other recreations activities are set up around the wetland which is not in use.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no runoff form the surrounding catchment area. There is regular and mining that is increasing the depth of the wetland and also removing the hydric soil form the wetland.
4.10 The wetland does not have any several temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.
4.11 The site is only used majorly used for sand mining.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland does not have any diversity of fish.
4.15 There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is no withdrawal of water for agriculture.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow, as there is insufficient water.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, soil mining although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chandl should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Avalpoondari Lake**

Jayakumar S. and Muralidharan S. (2010) Diversity of Colonial Nesting Birds in Different Heronries of Tamil Nadu, *Proceedings of the UGC Sponsored National Conference on Modern trends in Biodiversity Conservation and its sustainable utilization*, pp.7.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532

Table 8.5: List of Plant species recorded along the Avalpoonduri Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 2 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 3 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 4 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 5 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 6 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 7 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 8 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 9 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 10 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 11 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 12 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 13 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 14 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 15 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 16 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 17 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 18 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 19 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 20 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 21 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 8.4a: List of Insects recorded along the Avalpoondurai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table8.4b: List of Butterflies recorded along the Avalpoondurai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 5 | Common Crow | *Euploea core* | Danainae | Common |

Table 8.6c: List of Odonata recorded along the Avalpoondurai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 8.6d: List of Reptiles recorded along the Avalpoondurai Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 8.6e: List of Birds recorded along the Avalpoondurai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 3 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 4 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 5 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 6 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 7 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 8 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 9 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 10 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 11 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 12 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 13 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 14 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 15 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 16 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

Table 8.6f: List of Mammals recorded along the Avalpoondurai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |

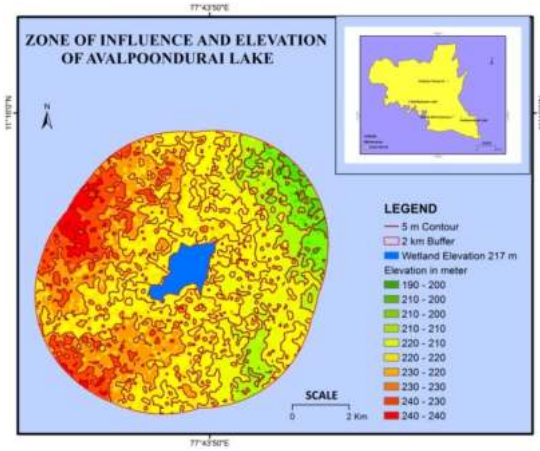
**Map 8.4: Comparative Google imagery for Avalpoondurai Lake**

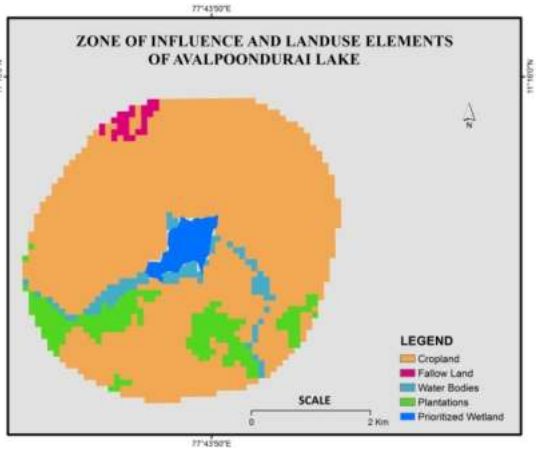






**Map 8.5: The zone of influence around the Avalpoondurai lake.**



**Kavilipalayam Lake**

Kavelipayayam is a part of Erode Taluk, in Erode District

**Lake Survey Number**: 93/1

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as Kavilipalayam Lake. (Plate 16).

1.2 Villages that surround the wetland include Ponjalur, Marappagoundar Pudhur, Koppakampalayam.

1.3 & 1.4 The lake is based in Nambiur taluka in Erode District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 23'38.6" N; 11° 23'13.6" N; 11° 23'27.3" N; 11° 23'41.7" N; 11° 23'41.2" N; and Longitude: 077° 13'36.3" E; 077° 13'18.4" E; 077° 13'11.6" E; 077° 13'12.7" E; 077° 13'31.9" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Erode division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 163 hectares (Map 8.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lake.

2.3 Based on the secondary information the average depth is 1 to 5.0 meters for the wetland.

2.4 The elevation of the wetland is 264 to 267 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Bhavani RiverNotchikottai kulam.
b) The water in the wetland is mostly of permanent nature though it shrinks in volume during summer.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was 8.65.
e) The lake has fresh water as salinity recorded was 125 ppt.

2.6 Climatic setting

a) Rainfall for the month of January in Erode was 15.1 mm.
b) The atmospheric temperature was 33°C and the humidity was 50%

2.7 The area of zone of influence is 2042.17 hectares with a fixed buffer area of 2 kms around the wetland (Map 8.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland and Scrubland 15 %; |
| Agriculture 60%; | Settlements (rural) 25%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2008 and 2018 is given in Maps 8.6 & 8.7.

**Section III- Biodiversity**

3.1 List of Plant species: 42 species of plants were recorded around the wetland during our visit (Table 8.7).

3.2 List of animal species: 58 animal species including 2 domestic species were recorded during the survey (List attached - Table 8.8a-i)

3.3 Species of Conservation importance: Threatened specie of birds were not observed during the survey (Table 8.8-i)

3.4 Major Plant invasive alien species and extent of invasion: Ten plants including *Eichhornia crassipes, Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around.
4.3 Fishery is undertaken as the wetland by giving tenders by PWD.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.7 It is a major source of ground water recharge.
4.8 There is no runoff form the surrounding catchment area. There is regular and mining that is increasing the depth of the wetland and also removing the hydric soil form the wetland.
4.10 The wetland does not have any several temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.
4.11 The site is only used majorly used for sand mining.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and wetland bird species during our survey.
4.14 The wetland does have local diversity of fish.
4.15 There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow, as there is insufficient water.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, soil mining although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chandl should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no literature available for Kavilipalayam Lake

Table 8.7: List of Plants recorded along the Kavilipalayam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 2 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 3 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 4 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 5 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 6 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 7 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 8 | *Sesbania sesban* | Common Sesban, Egyptian Rattlepod | | Fabaceae | Native | NA |
| 9 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 10 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 11 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 12 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 13 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 14 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 15 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 16 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 17 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 18 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 19 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 20 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 21 | *Ipomoea obscura* | Obscure Morning Glory | Chirutali, Kuruguttali, Sirudali | Convolvulaceae | Invasive | NA |
| 22 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 23 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 24 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 25 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 26 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 27 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 28 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 29 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 30 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | Makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 31 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 32 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 33 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 34 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 35 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 36 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 37 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 38 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 39 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 40 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 41 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 42 | *Urochloa setigera* | Signal grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 8.8a: List of Insects recorded along the Kavilipalayam Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 8.8b: List of Butterflies recorded along the Kavilipalayam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | African Marbled Skipper | *Gomalia elma* | Pyrginae | Uncommon |
| 2 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 5 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 6 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 7 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 10 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 11 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 14 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 15 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 16 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 17 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 18 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 8.8c: List of Odonates recorded along the Kavilipalayam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 7 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |
| 8 | Black Marsh Skimmer | *Indothemis carnatica* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 8.8d: List of Arachnida recorded along the Kavilipalayam Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Green Lynx Spider | *Peucetia viridana* | Oxyopidae |

Table 8.8e: List of Fishes recorded along the Kavilipalayam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 2 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 3 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 8.8f: List of Amphibians recorded form the Kavilipalayam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |
| 2 | Indian Cricket Forg | *Fejervarya limnocharis* | Dicroglossidae | Least Concern |

Table 8.8g: List of Reptiles recorded along the Kavilipalayam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 8.8h: List of Birds recorded along the Kavilipalayam Lake

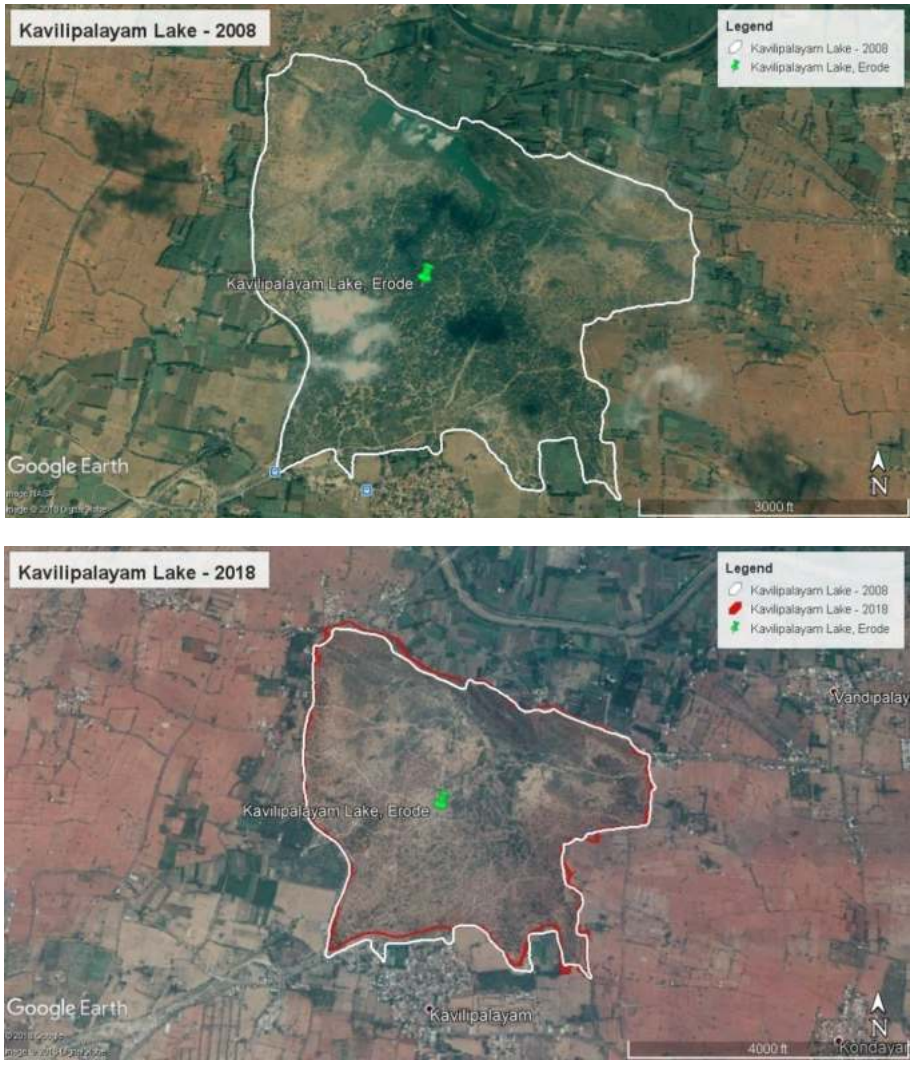
| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 5 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 6 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 7 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 8 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 9 | Laughing Dove | *Stigmatopelia senegalensis* | Columbidae | Least Concern |
| 10 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 11 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Red-rumped Swallow | *Cecropis daurica* | Hirundinidae | Least Concern |

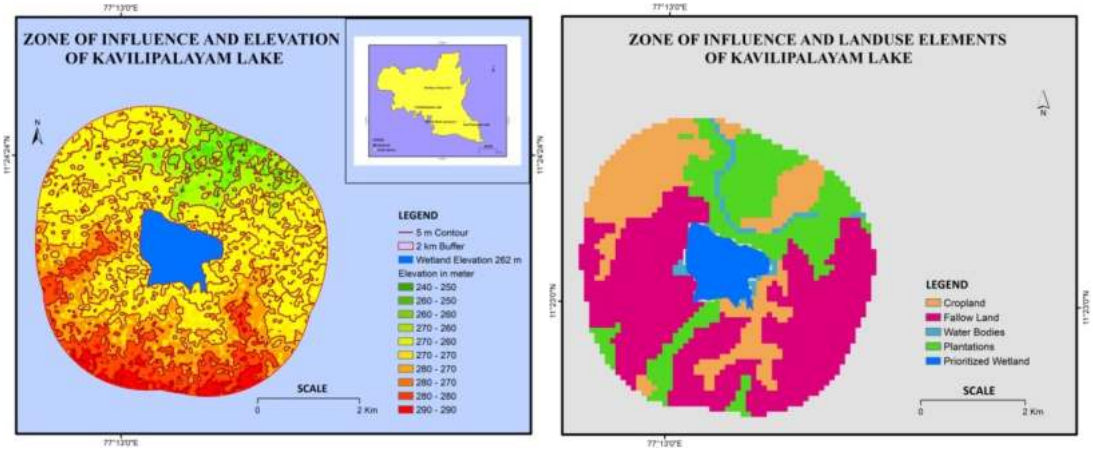
Table 8.8i: List of Mammals recorded along the Kavilipalayam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 8.6: Comparative Google imagery for Kavilipalayam Lake**




**Map 8.7: The zone of influence around the Kavilipalayam lake.**



**Vellode Bird Sanctuary**

Vellode Sanctuary is extended over an area of 77.1 hectares, and is situated in the Vadamugam Vellode village, 12 Kms form the city. The sanctuary serves as a dwelling place to several migratory birds as well as fishes and other aquatic animals.

**Lake Survey Number:** 503, 584.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Vellode Bird Sanctuary (Plate 16).

1.2 Villages that surround the wetland include Vellode, Thachankaraipazhi, Karukankattuvalasu, Semandabalayam, Selappampalayam, Vadamugam mettumpalayam, Vadamugam Vellode, Thenmugam Vellode, Pungambaadi

1.3 & 1.4 The lake is based in Erode District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 15'00.5" N; 11° 15'03.5" N; 11° 15'10.8" N; 11° 15'15.4" N; 11° 15'14.7" N; 11° 15'18.1" N; and Longitude: 077° 39'18.1" E; 077° 39'22.3" E; 077° 39'29.8" E; 077° 39'24.7" E; 077° 39'29.8" E; 077° 39'19.1" E;

1.6 The wetland is a Protected Area it is a Bird Sanctuary

1.7 The wetland comes under the jurisdiction of Forest Department, Erode division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 77.5 hectares (Map 8.8).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category in the sub category intermitant seasonal lakes.

2.3 Based on the secondary information the average depth is 2 meters for the wetland.

2.4 The elevation of the wetland is 247to 252 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is intermittent nature with some water is present only for a few weeks during the rains, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the wetland was half dry. The wetland used to get water through the Lower Bhavani which has been stopped for the past two years.
c) The water form the wetlands help in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.
d) The pH of the water was 8.0.
e) The lake has fresh water as Salinity was 0.120 ppt.
f) The wetland was partially dry and the aquatic vegetation like *Ipomoea sp* and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Erode was 15.1 mm.
b) The atmospheric temperature was 30.4°C and the humidity was 41 %.

2.7 The area of zone of influence is 2375.6 hectares with a fixed buffer area of 2 kms around the wetland (Map 8.9).

2.8 The major land use around the wetland comprised of

Agricultural lands 85 %; Settlements (Rural) 5%;
Grassland 10%; Industries 0%.

2.9. The comparison of the wetland for the years 2011 and 2017 is given in Map 8.8 & 8.9.

**Section III- Biodiversity**

3.1 List of Plant species: 64 species of plants were recorded around the wetland during our visit (Table 8.9).

3.2 List of animal species: 94 animal species including 4 domestic species were recorded during the survey (Table 8.10 a-h).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey but two species of threatened fish were recorded (Table 8.10 a-h).

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed major part of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the borewell water and lower Bhavani water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The are farmlands where agriculture is undertaken around the wetland using borewell water.

4.3 Fishery is not undertaken.

4.4 The wetland is not used for any aquatic food cultivation

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present. The wetland is a bird sanctuary and attracts a good population of Tourist.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no runoff form the surrounding area as it is a water deficient area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There are high-tension wires passing through the wetland.

4.11 The site is used majorly used by the locals for grazing their cattle and goats.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is no withdrawal of water for agriculture or fishery purpose.

5.6 The wetland was faced drought for the past few years.

5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow due to depleting water in the wetland.

6.2 The wetland has been facing drought condition for the past 5 years.

**Section VII Notification Category**

The wetland is a bird sanctuary protected by the forest department and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Increase in the temple activities around the wetland and the agriculture practices can majorly change the wetland character.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Vellode Bird Sanctuary**


Aruna Devi P.S. and Saravanaraja M. (2016) Antibacterial efficacy of *Fabaceae* plants of a tropical lake of South India, *International Journal of Research in Pharmacy and Science*6(3), pp. 1-5, ISSN 2249-3522.

Balasubramanian P., Silambarasan S. and Manikandan P. (2015) Birds of the Vellode Bird Sanctuary, Tamil Nadu *Sarovar Saurabh ENVIS Newsletter*. 11 (3) pp. 1-5.

Nagarajan K. and Saravanaraja M. (2014) Role of phosphates on algal blooming during the summer months in Vellode lake, Aruna Devi *et al*. *Int J Res Pharm Sci* 2016, 6(3); 1-5 ISSN 2249-35225 Erode district, Tamilnadu, India, I. J. Univ. Pharmacy Biosci. Vol. III (I) pp. 19-25.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Subramanya S. (2005) Heronries of Tamil Nadu, *Indian Birds.* 1(6), pp. 125-148.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 8.9: List of Plant species recorded along the Vellode Bird Sanctuary

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermacea e | Native | |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 4 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 5 | *Portulaca oleracea* | Indian Parseland | Paruppu keerai, Pulikkeerai | Portulacaceae | Native | NA |
| 6 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 7 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 8 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 9 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 10 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 11 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 12 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 13 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 14 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 15 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 16 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 17 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 18 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 19 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 20 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 21 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 22 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 23 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 24 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 25 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 26 | *Bidens pilosa* | Beggar Tick | Mukkuthi | Asteraceae | Exotic | NA |
| 27 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 28 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 29 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 30 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 31 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 32 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 33 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 34 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 35 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 36 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 37 | *Trichodesma indicum* | Indian Borage | Kallutaitumapi | Boraginaceae | Native | NA |
| 38 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 39 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 40 | *Datura stramonium* | Common Thorn apple | Oomathai | Solanaceae | Native | NA |
| 41 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 42 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, Pulinagam | Martyniaceae | Native | NA |
| 43 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 44 | *Barleria prionitis* | Porcupine Flower | Semmulli, Korantam | Acanthaceae | Native | NA |
| 45 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 46 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 47 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 48 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 49 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 50 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 51 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 52 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | Makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 53 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 54 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 55 | *Euphorbia antiquorum* | Triangular Spurge, Square Spurge, Square milk hedge, Fleshy spurge | Chaturakalli, Kalli, Kantiravam, Kodiravam, Tiruvargalli | Euphorbiaceae | Native | |
| 56 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 57 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 58 | *Ficus amplissima* | Yellow barked fig | | Moraceae | Native | NA |
| 59 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 60 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 61 | *Cyperus corymbosus* | Peri peri | | Cyperaceae | Native | NA |
| 62 | *Apluda mutica* | Mauritian Grass | | Poaceae | Native | NA |
| 63 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 64 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 8.10a: List of Insects recorded along the Vellode Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Water Scorpion | *Laccotrephes griseus* | Nepidae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 7 | Weaver Ant | *Oecophylla smaragdina* | Formicidae |
| 8 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 9 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 10 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 11 | Indian Robber fly | *Asilidae sp.* | Asilidae |

Table 8.10b: List of Butterflies recorded along the Vellode Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 8 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 9 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 10 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 11 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 12 | Common Crow | *Euploea core* | Danainae | Common |
| 13 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 14 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 15 | Common Castor | *Ariadne merione* | Biblidinae | Common |
| 16 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 8.10c: List of Odonata recorded along the Vellode Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Blue Dart | *Pseudagrion microcephalum* | Coenagrionidae | Common |
| 5 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 8 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 9 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 10 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 11 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |
| 12 | Black Marsh Trotter | *Tramea limbata* | Libellulidae | Common |
| 13 | Crimson Marsh Glider | *Trithemis aurora* | Libellulidae | Common |
| 14 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 8.10d: List of Arachnida recorded along the Vellode Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 8.10e: List of Fishes recorded form the Vellode Bird Sanctuary

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 10 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 8.10f: List of Reptiles recorded along the Vellode Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

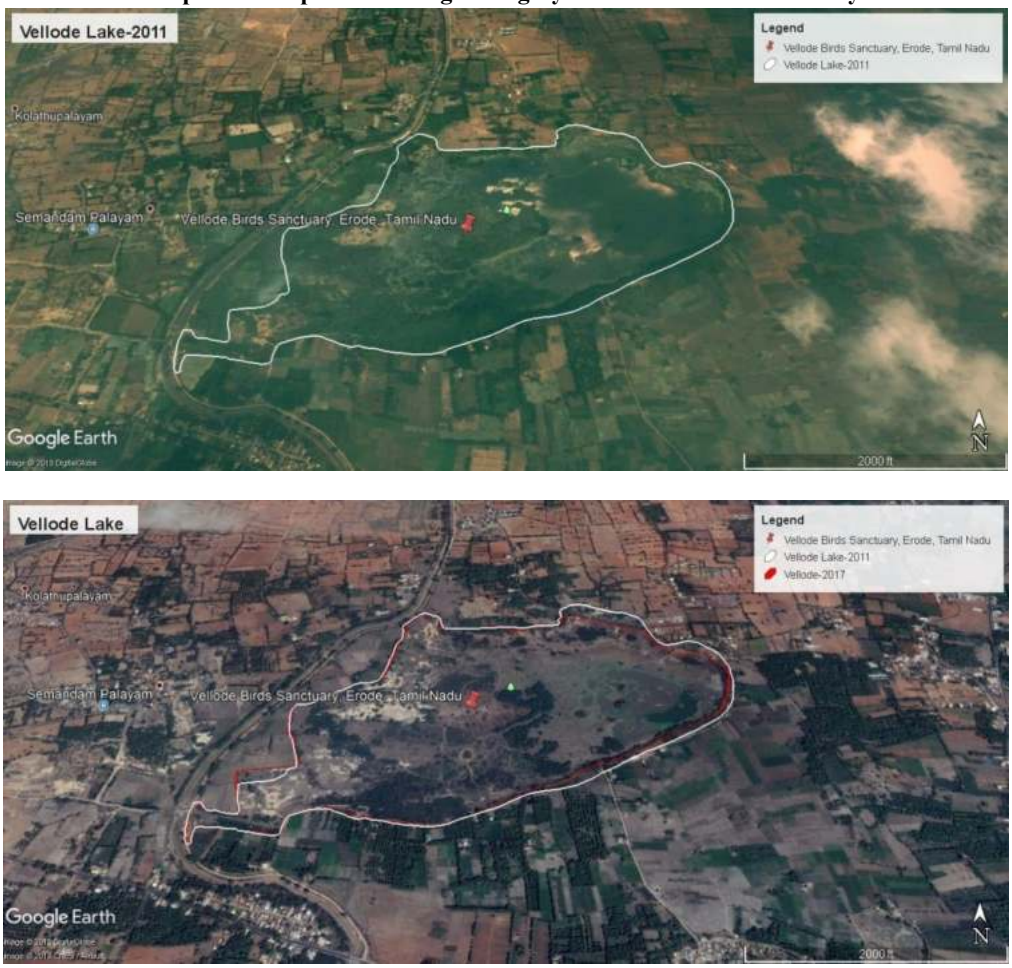
Table 8.10g: List of Birds recorded along the Vellode Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Northern Pintail | *Anas acuta* | Anatidae | Least Concern |
| 3 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 11 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 12 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 13 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 14 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 15 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 16 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 17 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 18 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 19 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 22 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 23 | White-browed Bulbul | *Pycnonotus luteolus* | Pycnonotidae | Least Concern |
| 24 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 25 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 26 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 27 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 28 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 29 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 30 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 31 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 32 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 33 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

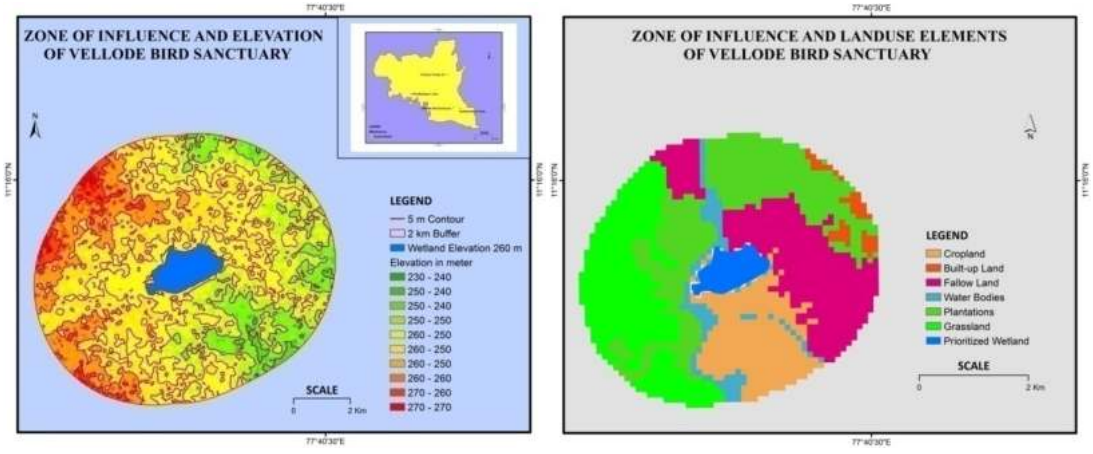
Table 8.10h: List of Mammals recorded along the Vellode Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |

**Map 8.8: Comparative Google imagery for Vellode Bird Sanctuary**




**Map 8.9: The zone of influence around the Vellode Bird Sanctuary.**



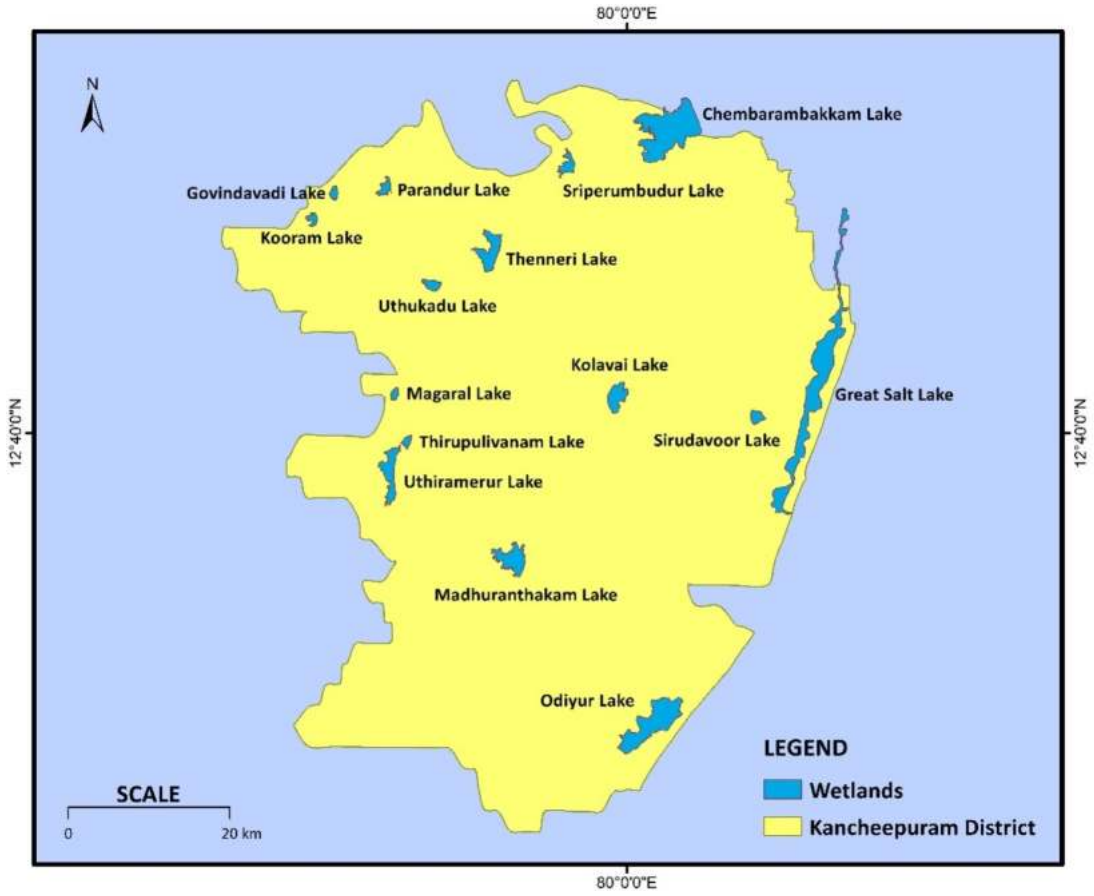
## 9. Kancheepuram District

### 1. Introduction

Kancheepuram or Kanchi is considered as one of the seven sacred cities of India. Kancheepuram region is sometimes referred to as the "District of Lakes," due to numerous tanks and lakes including the major ones at Chembarambakkam, Sriperumpudur, Thenneri, Mathuranthakam, Uthiramerur, and Chengalpattu (Kolavai Lake). There are 1,942 tanks in the region, maintained by the State P.W.D. and the local bodies. The tanks are mostly harnessed for irrigation purposes.

Kancheepuram is situated on the northern East Coast of the state and is adjacent to Bay of Bengal and Chennai city. The district is bounded on the west by Vellore and Thiruvannamalai district, on the north by Thiruvallur district and Chennai district, on the south by Villuppuram district and on the east of Bay of Bengal. Total geographic area of Kancheepuram is 7857 km². Major tourist attractions in the district include Vedantangal Birds Sanctuary, Covelong beach, Sadras beach, and the crocodile bank. Total area under wetland is 80445 ha, which includes 487 small wetland (<2.25 ha). Lakes/Ponds occupy 44.03% of wetland area. The second major wetland type is Tanks/Ponds. There are 1178 Tanks/Ponds with 18372 ha area (22.84%).

SACON during 2004 had prioritized 14 wetlands form Kancheepuram district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these 14 wetlands to assess its present potential for conservation (Map 9.1). In addition we selected two more based on the google imagery and internet portal data. However, one of the wetlands was assigned to Chennai district due to the due to the remarks district boundaries.




**Map9.1: Wetlands of Kancheepuram assessed for Prioritization**

**Observations**

Fifteen wetlands were selected in the district, with Great Salt Lake, Odiyur and Chembarambakkam being the largest while Magaral is the smallest of all the wetlands. Around the wetlands, we recorded 250 plant species both aquatic and terrestrial including 25 invasive species (Table 9.1). The faunal components totaled 238 species with the representation of 89 bird species including the wetland birds. Of the 15 wetlands Govindavadi was eutrophic and the Magaral wetland despite being dry showed vegetation that indicated eutrophic status of the wetland. Form the remaining seven were mesotrophic and six were oligotrophic in status (Table 9.2a-c). The water quality and soil quality of the wetlands assessed are presented in Table 9.2 a-c.

Since maximum numbers of wetlands were assessed in Kancheepuram district the concerns were much the same for all the wetlands but at varying levels. The wetlands are observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level and regional level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Chembarambakkam Lake. The release of sewage that influences the character of the wetland was also one of the major concerns.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized on the basis of Wetland Health Status in the following order for conservation:

1. Magaral Lake
2. Great Salt Lake
3. Sriperumbudur Lake
4. Sirudavoor Lake
5. Odiyur Lake
6. Parandur Lake
7. Chembarambakkam Lake
8. Uthukadu Lake
9. Kolavai Lake
10. Thenneri Lake
11. Thirupulivanam Lake
12. Govindavadi Lake
13. Uthiramerur Lake
14. Madhuranthakam Lake
15. Kooram Lake

Table 9.1: The flora and fauna recorded form the wetlands of Kancheepuram District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Uthiramerur Lake | 58(8) | 16 | 8 | 26 | 2 | 13 | 3 | 3 | 34 | 4 |
| 2 | Parandur Lake | 48(10) | 5 | 7 | 18 | 2 | 20 | 0 | 3 | 26 | 3 |
| 3 | Govindavadi Lake | 59(12) | 11 | 7 | 28 | 1 | 10 | 2 | 3 | 32 | 4 |
| 4 | Kooram Lake | 77(13) | 17 | 8 | 32 | 3 | 17 | 1 | 4 | 40 | 3 |
| 5 | Uthukadu Lake | 61(9) | 10 | 11 | 29 | 2 | 21 | 1 | 4 | 30 | 3 |
| 6 | Thirupulivanam Lake | 71(13) | 14 | 7 | 23 | 2 | 18 | 0 | 2 | 37 | 5 |
| 7 | Magaral Lake | 64(10) | 6 | 7 | 23 | 1 | 21 | 0 | 3 | 21 | 3 |
| 8 | Sriperumbudur Lake | 44(9) | 5 | 7 | 12 | 1 | 11 | 0 | 3 | 19 | 3 |
| 9 | Thenneri Lake | 54(8) | 5 | 8 | 15 | 2 | 18 | 0 | 2 | 18 | 4 |
| 10 | Kolavai Lake | 83(15) | 11 | 12 | 20 | 2 | 15 | 0 | 3 | 46 | 5 |
| 11 | Great Salt Lake | 60(12) | 20 | 9 | 24 | 2 | 17 | 0 | 3 | 59 | 5 |
| 12 | Madhuranthakam Lake | 77(11) | 9 | 11 | 22 | 0 | 16 | 0 | 2 | 32 | 4 |
| 13 | Odiyur Lake | 50(8) | 4 | 4 | 16 | 0 | 0 | 0 | 1 | 31 | 5 |
| 14 | Sirudavoor Lake | 31(8) | 6 | 6 | 12 | 0 | 5 | 0 | 1 | 14 | 5 |
| 15 | Chembarambakkam Lake | 70(16) | 6 | 7 | 17 | 1 | 10 | 0 | 3 | 43 | 5 |
| | Total | 250(25) | 36 | 15 | 50 | 3 | 31 | 3 | 5 | 89 | 6 |

Table 9.2a: The water and soil quality assessed form the wetlands of Kancheepuram District

| District Name | Kanchipuram | | | | |
|---|---|---|---|---|---|
| **Wetland Name** | Chembarambakkam Lake | Govindavadi Lake | Sriperumpudur Lake | Thenneri Lake | Thirupulivanam Lake |
| **Wetland area (ha)** | 3368 | 127 | 314 | 807 | 116 |
| **Buffer Area in Hectare (ha)** | 7127.14 | 2181.71 | 3244.89 | 4363.98 | 2228.38 |
| **Air Temperature °C** | 26.5 | 28.1 | 27.5 | 28.7 | 24.3 |
| **Water Temperature °C** | 26.5 | 27.2 | 27.3 | 28.7 | 25.8 |
| **Humidity %** | 74 | 55 | 52 | 55 | 76 |
| **Nutrients in Water** | Mesotrophic | Eutrophic | Mesotrophic | Oligotrophic | Mesotrophic |
| **Water pH** | 8 | 7.4 | 7.5 | 7.5 | 8 |
| **Water TDS ppm** | 292 | 292 | 133 | 138 | 206 |
| **Water Conductivity ppm** | 1669 | 1032 | 216 | 472 | 451 |
| **Light Penetration cms** | 75 | 87.4 | 75 | 88 | 87 |
| **Water Salinity ppt** | 0.174 | 0.174 | 0.138 | 0.138 | 0.174 |
| **DO mg/L** | 4.88 | 3.25 | 6.10 | 8.94 | 1.02 |
| **PO4P mg/L** | 0.015 | 0.026 | 0.052 | 0.059 | 0.005 |
| **Water Na ppm** | 47.55 | 39.9 | 20.8 | 28.15 | 27.4 |
| **Water K ppm** | 2.8 | 4.2 | 2.7 | 1.2 | 4.4 |
| **Water Li ppm** | 0 | 0 | 0 | 0 | 0.05 |
| **Water Ca ppm** | 25.5 | 18.55 | 17.9 | 9.25 | 22.25 |
| **Soil Colour code** | 2.5Y 5/6 | 10YR 6/8 | | 10YR 5/6 | 10YR 5/3 |
| **Soil Colour** | Light Olive Brown | Brownish Yellow | soil was not accessible | Yellowish Brown | Brown |
| **Soil pH** | 7.37 | 7.03 | | 7.64 | 7.93 |
| **Soil TDS ppm** | 619 | 362 | | 156 | 171 |
| **Soil Conductivity ppm** | 874 | 508 | | 220 | 241 |
| **Soil Salinity ppt** | 0.43 | 0.247 | | 0.107 | 0.116 |
| **Soil Na ppm** | 90.4 | 61.3 | | 22.2 | 11.5 |
| **Soil K ppm** | 7.2 | 6 | | 2.3 | 6.3 |
| **Soil Li ppm** | 0.1 | 0.1 | | 0 | 0.1 |
| **Soil Ca ppm** | 53 | 26.7 | | 11 | 16.6 |

Table 9.2b: The water and soil quality assessed form the wetlands of Kancheepuram District

| District Name | Kanchipuram | | | | |
|---|---|---|---|---|---|
| Wetland Name | Uthiramerur Lake | Uthukadu Lake | Great Salt Lake | Kolavai Lake | Kooram Lake |
| Wetland area (ha) | 788 | 219 | 4122 | 584 | 137 |
| Buffer Area in Hectare (ha) | 5039.78 | 2543.27 | 18990.7 | 3340.91 | 2308.82 |
| Air Temperature °C | 29.3 | 30.9 | 27.5 | 28 | 24.7 |
| Water Temperature °C | 28.5 | 29.5 | 24.7 | 27 | 25.5 |
| Humidity % | 58 | 46 | 64 | 80 | 74 |
| Nutrients in Water | Mesotrophic | Oligotrophic | Mesotrophic | Mesotrophic | Mesotrophic |
| Water pH | 8.5 | 8.5 | 8.4 | 8 | 7.4 |
| Water TDS ppm | 218 | 435 | 3025 | 338 | 86 |
| Water Conductivity ppm | 343 | 437 | 1000 | 550 | 339 |
| Light Penetration cms | 54 | 108 | 24 | 70 | 57 |
| Water Salinity ppt | 0.174 | 0.389 | 16.895 | 0.317 | 0.138 |
| DO mg/L | 6.91 | 9.76 | 7.32 | 3.05 | 3.05 |
| PO4P mg/L | 0.035 | 0.062 | 0.043 | 0.142 | 0.009 |
| Water Na ppm | 33.55 | 107.95 | 2812 | 56.3 | 27.75 |
| Water K ppm | 36.2 | 4.6 | 141.2 | 32.15 | 3.75 |
| Water Li ppm | 0.35 | 0.1 | 2.15 | 0.3 | 0 |
| Water Ca ppm | 17.15 | 37.8 | 1011.7 | 32.85 | 6.55 |
| Soil Colour code | 10YR 5/6 | | 10YR 6/1 | 2.5YR 5/3 | 10YR 8/3 |
| Soil Colour | Yellowish Brown | soil was not accessible | Gray | Reddish Brown | Very Pale Brown |
| Soil pH | 7.7 | | 8 | 7.83 | 7.42 |
| Soil TDS ppm | 95.7 | | 2758 | 207 | 98.8 |
| Soil Conductivity ppm | 134 | | 2443 | 291 | 139 |
| Soil Salinity ppt | 0.68 | | 0.781 | 0.14 | 0.069 |
| Soil Na ppm | 8.2 | | 180.2 | 20.9 | 11.8 |
| Soil K ppm | 1.9 | | 15.9 | 10.5 | 3.1 |
| Soil Li ppm | 0 | | 0.2 | 0.1 | 0 |
| Soil Ca ppm | 6.6 | | 37.8 | 16.5 | 8.4 |

Table 9.2c: The water and soil quality assessed form the wetlands of Kancheepuram District

| District Name | Kanchipuram | | | | |
|---|---|---|---|---|---|
| Wetland Name | Madhuranthakam Lake | Magaral Lake | Odiyur Lake | Parandur Lake | Sirudavoor Lake |
| Wetland area (ha) | 893 | 105 | 2172 | 201 | 203 |
| Buffer Area in Hectare (ha) | 4300.68 | 2116.34 | 6352.14 | 2746.42 | 2433.36 |
| Air Temperature °C | 31 | 29 | 30.15 | 26.8 | 30.6 |
| Water Temperature °C | 29.5 | | 29.15 | 275 | 34 |
| Humidity % | 58 | 65 | 63.5 | 62 | 85 |
| Nutrients in Water | Oligotrophic | Eutrophic | Oligotrophic | Oligotrophic | Oligotrophic |
| Water pH | 7.4 | | 8.41 | 7.3 | 8.54 |
| Water TDS ppm | 205 | | 34.05 | 121 | 342 |
| Water Conductivity ppm | 619 | | 48.33 | 470 | 490 |
| Light Penetration cms | 128 | | 70 | 81 | 20 |
| Water Salinity ppt | 0.209 | | 26.8 | 0.174 | 0.236 |
| DO mg/L | 7.93 | | 1.12 | 7.11 | 0.00 |
| PO4P mg/L | 0.011 | | 0.039 | 0.086 | 0.007 |
| Water Na ppm | 27.25 | | 7500 | 10.8 | 600 |
| Water K ppm | 27.4 | | 166.8 | 1.4 | 6 |
| Water Li ppm | 0.3 | | 3.55 | 0 | 0.3 |
| Water Ca ppm | 24.4 | | 33567 | 1.73 | 98.1 |
| Soil Colour code | 10YR 5/4 | 10YR 5/3 | 10YR 7/2 | | 10YR 3/2 |
| Soil Colour | Yellowish Brown | Brown | Light Gray | soil was not accessible | Very dark Grayish Brown |
| Soil pH | 7.8 | 7.5 | 7.26 | | 7.59 |
| Soil TDS ppm | 565 | 139 | 5.08 | | 319 |
| Soil Conductivity ppm | 750 | 195.4 | 7170 | | 449 |
| Soil Salinity ppt | 0.343 | 0.095 | 3.9 | | 0.217 |
| Soil Na ppm | 48.9 | 21.6 | 1291.5 | | 20.6 |
| Soil K ppm | 8.1 | 5.8 | 715 | | 3.1 |
| Soil Li ppm | 0.1 | 0.1 | 0.9 | | 0 |
| Soil Ca ppm | 16.9 | 11.2 | 109 | | 30.8 |

**ChembarambakkamLake**

Chembarambakkam Lake, is a lake located about 25 km form Chennai. It is one of the two rain-fed reservoirs form where water is drawn for supply to Chennai City. The Adyar River originates form this lake. It is one of the 24 kottams (villages) that existed even during the later Chola period in Thondai Mandalam which had Kancheepuram as its headquarters. The Full Tank Level is 85.40 ft (26.03 m). The Full Capacity (mcft) of the lake is 3,645 million ft³ (108 million m³). The Level of the tank in feet is 75.60 ft (23.04 m).

**Lake Survey Number**: 375, 280, 281, 1291

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Chembarambakkam Lake was known as Puliyur Kottam (Plate 17).

1.2 Villages that surround the wetland include Chembarambakkam, Palanjur, Chetipedu, Thomdalam, Kevalur, Katarambakkam, Pethipedu, Sarakalathur, Kelthipet

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 00'35.2" N; 12° 59'07.5" N and Longitude: 080° 01'33.1" E; 080° 03'37.9" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 3383 hectares (Map 9.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lakes.

2.3 Based on the secondary information the average depth is 4 meters for the wetland.

2.4 The elevation of the wetland is 24 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of intermittent nature.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater and the overflow goes to the river.
d) The pH of the water was observed to be alkaline and recorded up to 7.5.
e) The lake has fresh water with the salinity recorded at 0.174 ppt at the time of sampling.
f) The wetland was observed to be Mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfall for the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature was 27.5 °C and the humidity was 52%

2.7 The area of zone of influence is 7127.14 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Agriculture 10%, | Settlements (rural) 20%, |
| Settlements (Urban) 20% | Industrial 50%. |
| Grasslands 0% | Forest 0% |

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 9.2 & 9.3.

**Section III- Biodiversity**

3.1 List of Plant species:64 species of plants were recorded around the wetland during our visit (Table 9.3).

3.2 List of animal species:92 faunal species excluding 4 domestic species were recorded during the survey (Table 9.4a-h)

3.3 Species of Conservation importance: Migratory and Common species of birds were observed during the survey with one threatened category bird and two fish species recorded during our survey (Table 9.4a-h)

3.4 Major Plant invasive alien species and extent of invasion: 16 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Ipomoea sp* and *Microcystis sp.* formed nearly 80 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for drinking purpose.

4.2 Agriculture is undertaken around the wetland and almost 10% of the lake water is used for irrigation.

4.3 Fishing is undertaken in the wetland with permission form the PWD department.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The bird enthusiast visit the wetland.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a fishery the seeds for which are released by the fisheries department.

4.15 There was no mining for sand or silt undertaken. However, extraction of water to supply for drinking was recorded.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity and some recreational fishery is undertaken.

5.2 Major portion of the water is utilized for drinking and irrigation.

5.3 Agriculture is undertaken around the wetland and not within the wetland.

5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.

5.5 The water is used for domestic purposes washing, bathing.

5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

5.7 Religious and cultural functions are performed along the banks of the wetland.

**Section VI Present and potential threats**

6.1 The wetland does not show a major change in the pattern of water inflow and outflow.

6.2 There is release of sewage, effluents and solidwaste dumping along the banks of the wetland.

6.3 There is increase in agricultural activities around the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland has idol immersion while solid waste dumping and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

There are developmental activities that are taking place around the wetland that include setting up of new industries, encroachment and agriculture. Moreover the release of effluents and sewage has to be regulated and treated before it can spoil the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing. There is increase in the release of effluents and sewage into the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Chambrapakkam Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach. Ph.D. Thesis Ludwig-Maximilians-Universität München. pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

Mariappan N. and Richard L. (2006) Studies on freshwater prawns of family Atyidae and Palaemonidae form Kancheepuram and Thiruvallur districts, Tamilnadu, India, including one new species of the Genus *Caridina* H. Milne Edwards, 1837. Rec. Zool. Surv. India, Occ. Paper No. 243 : 1-80, (Published by the Director, Zool. Surv. India, Kolkata)

Nagalakshmi R. and Prasanna K. (2016)2015 Flood assessment in Kancheepuram district of Tamil Nadu using GIS Rasayan Journal of Chemistry Vol. 9 (No. 4): 798 - 805

PWD (2000) Groundwater perspectives: a profile of Kancheepuram District, Tamil Nadu. Public Works Department, Tamil Nadu, June, 220 pp

Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern India Hydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0

Senthilkumar M., Gnanasundar D. and Sampath Kumar E. (2018) Deciphering Freshwater/Saline Water Interface in and Around Northern Chennai Region, Southern India. In: Saha D., Marwaha S., Mukherjee A. (eds) Clean and Sustainable Groundwater in India. Springer Hydrogeology. Springer, Singapore


Table 9.3: List of Plant species recorded along the Chembarambakkam Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nymphaea odorata* | Meghalaya Red Water Lily | | Nymphaeaceae | Native | LC |
| 2 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 3 | *Choris poratenella* | Blue Mustard | --- | Brassicaceae | Native | NA |
| 4 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 5 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 6 | *Portulaca oleracea* | Indian Parseland | Paruppukeerai, Pulikkeerai | Portulacaceae | Native | NA |
| 7 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 8 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 9 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 10 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 11 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 12 | *Oxalis corniculata* | Creeping Wood Sorrel | Puliyarai, Paliakiri | Oxalidaceae | Invasive | NA |
| 13 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 14 | *Alysicarpus ovalifolius* | Alyce clover | | Fabaceae | Native | NA |
| 15 | *Alysicarpus vaginalis* | Alysiclover | | Fabaceae | Native | NA |
| 16 | *Indigofera linifolia* | Narrowleaf Indigo | IraththinaMaalai | Fabaceae | Native | LC |
| 17 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 18 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 19 | *Sesbania grandiflora* | Agati | Sevvagatti, muni | Fabaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 21 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 22 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 23 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 24 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 25 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 26 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 27 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 28 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 29 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 30 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 31 | *Gymnema sylvestre* | Cowplant | Cirukurinchchan | Apocynaceae | Native | NA |
| 32 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 33 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 34 | *Hewittia malabarica* | Clustered Morning Glory | Onaankodi, Onan Kodi | Convolvulaceae | Invasive | NA |
| 35 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 36 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 37 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 38 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 39 | *Solanum nigrum* | Black nightshade,Blackberrynightshade,Nightshade,Poison berry | Manathakkali | Solanaceae | Native | NA |
| 40 | *Striga densiflora* | Denseflower Witchweed, Agya | | Orobanchaceae | Native | NA |
| 41 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |
| 42 | *Stachytarpheta jamaicensis* | Blue Porterweed | SeemaiNayuruvi | Verbenaceae | Native | NA |
| 43 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 44 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 45 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 46 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 47 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 48 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 49 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 50 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 51 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 52 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 53 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 54 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 55 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 56 | *Cyperus dubius* | White Water Sedge | Velutthanirbasi | Cyperaceae | Native | LC |
| 57 | *Fimbristylis dichotoma* | | | Cyperaceae | Native | LC |
| 58 | *Schoenoplectussu bulatus* | Common Club-rush | | Cyperaceae | Native | NA |
| 59 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 60 | *Bothrio chloapertusa* | Pitted beard grass | | Poaceae | Native | NA |
| 61 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 62 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 63 | *Enteropogondolicho stachyus* | Finger grass | | Poaceae | Native | NA |
| 64 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.4a: List of Insects recorded along the Chembarambakkam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptys mamarginicollis* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Bombardier Beetle | *Brachinus sp.* | Carabidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 9.4b: List of Butterflies recorded along the Chembarambakkam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachlio ptaaristolochiae* | Papilioninae | Common |
| 2 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Dark Grass Blue | *Zizeeriakar sandra* | Polyommatinae | Common |
| 8 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 9 | Small Grass Jewel | *Freyeri aputli* | Polyommatinae | Common |
| 10 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 11 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Common Crow | *Euploea core* | Danainae | Common |
| 14 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 15 | Angled Castor | *Ariadne* | Biblidinae | Uncommon |
| 16 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 17 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.4c: List of Odonata recorded along the Chembarambakkam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrums abina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 7 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 9.4d: List of Arachnida recorded along the Chembarambakkam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 9.4e: List of fishes recorded form the Chembarambakkam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 7 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 9 | *Anabas testudineus* | Climbing erch | Panangottaimeen, Payonerikendaimeen | Anabantidae | DD |
| 10 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.4f: List of Reptiles recorded along the Chembarambakkam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Water Snake | *Xenochrophis piscator* | Colubridae | Least Concern |

Table 9.4g: List of Birds recorded along the Chembarambakkam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 3 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 4 | Asian Openbill | *Anastomusos citans* | Ciconiidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 5 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 6 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 7 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 8 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 9 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 10 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 11 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 12 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 13 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 14 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 15 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 16 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 17 | Purple Swamphen | *Porphyrio* | Rallidae | Least Concern |
| 18 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 19 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 20 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 21 | Green Sandpiper | *Tringao chropus* | Scolopacidae | Least Concern |
| 22 | Brown-headed Gull | *Chroicocephalus brunnicephalus* | Laridae | Least Concern |
| 23 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 24 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 25 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 26 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 27 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 28 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 29 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 30 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 31 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 32 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 33 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 34 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 35 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 36 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 37 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 38 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 39 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 40 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 41 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 42 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |
| 43 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

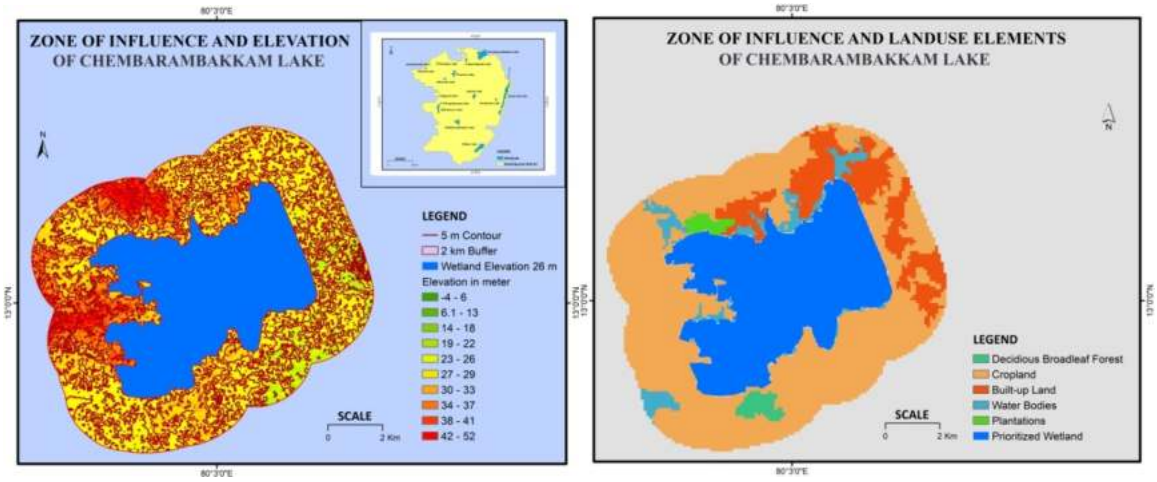
Table 9.4h: List of Mammals recorded along the Chembarambakkam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.2: Comparative Google imagery for Chembarambakkam Lake**




**Map 9.3: The zone of influence around the Chembarambakkam Lake.**



**GovindavadiLake**

**Lake Survey number**: 402 / 5A

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Govindavadi Lake (Plate 17)

1.2- Villages that surround the wetland include Govindavadi, Oovarisathiram, Pudhupakkam, Veliannur and Kamarapalayam.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 56'11.0" N; 12° 56'02.2" N and Longitude: 079° 40'38.9" E; 079° 40'40.2" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 127 hectares (Map 9.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Seasonal intermittent lakes.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 94 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area. This is part of the Pallar river system.
b) The water in the wetland is mostly of intermittent nature.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The wateralso helps in replenishing the groundwater and the overflow goes to the river.
d) The pH of the water was observed to be alkaline and recorded up to 7.5.
e) The lake has fresh water with the salinity recorded at 0.174 ppt at the time of sampling.
f) The wetland was observed to be closer to Eutrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfall for the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature was 28.1° C and the humidity was 59%.

2.7 The area of zone of influence is 2181.71 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Agriculture 90%; | Settlements (Rural) 10%; |
| Settlements (Urban) 0%; | Forests 0%; |
| Grasslands 0%; | Industries 0% |

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 9.4 & 9.5.

**Section III- Biodiversity**

3.1 List of Plant species: 54 species of plants were recorded around the wetland during our visit (Table 9.5).

3.2 List of animal species: 98 faunal species including 2 domestic species were recorded during the survey (Table 9.6a-i)

3.3 Species of Conservation importance: Migratory and Common species of birds were observed during the survey with one threatened category bird and two fish were recorded during our survey (Table 9.6a-i)

3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Ipomoea sp* and *Microcystis sp.* formed nearly 80 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.

4.3 Fishing as a livelihood is undertaken by a few families. The seeds are introduced by the fisheries department.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge and overflow form the wetlands passes to the Pallar river.

4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The bird enthusiast do not visit the wetland despite the diversity.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.

4.14 The wetland supports fishery although it is not for any commercial purpose.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is little commercial fishing activity and some recreational fishery is undertaken. Fishing is a community right of the village administration and is under the lease given every year.

5.2 Major portion of the water is utilized for irrigation.

5.3 Agriculture is undertaken around the wetland and not within the wetland.

5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.

5.5 The water is not used for domestic purposes washing, bathing.

5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

5.7 Religious and cultural functions are performed along the banks of the wetland.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition as per the information form the locals.

6.3 There is increase in agricultural activities around the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.

6.5 The wetland has no idol immersion while solid waste dumping and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages.

There is a Railway tract near the wetland that could have some impact on the bird diversity.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Govindavadi Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture. Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi. pp. 241.

Mariappan N. and Richard 1. (2006) Studies on freshwater prawns of family Atyidae and Palaemonidae form Kanchipuram and Thiruvallur districts, Tamilnadu, India, including one new species of the Genus *Caridina* H. Milne Edwards, 1837. Rec. Zool. Surv. India, Occ. Paper No. 243 : 1-80, (Published by the Director, Zool. Surv. India, Kolkata)

Nagalakshmi R. and Prasanna K. (2016) 2015 Flood assessment in Kancheepuram district of Tamil Nadu using GIS Rasayan Journal of Chemistry Vol. 9 (No. 4): 798 - 805

PWD (2000) Groundwater perspectives: a profile of Kancheepuram District, Tamil Nadu. Public Works Department, Tamil Nadu, June, 220 pp

Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern India Hydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0


Table 9.5: List of Plant species recorded along the Govandavadi Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Status |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 3 | *Nymphaea nouchali* | Blue water lily | Neelambal | Nymphaeaceae | Native | LC |
| 4 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 5 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 6 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 7 | *Corchorus aestuans* | East Indian Mallow, Jute, | | Malvaceae | Native | |
| 8 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 9 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 10 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 11 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 12 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, | Fabaceae | Native | NA |
| 13 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 14 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 15 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 16 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 17 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 18 | *Turner asubulata* | White Alder | | Turneraceae | Invasive | NA |
| 19 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 20 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 21 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 22 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 23 | *Emilia sonchifolia* | Purple Sow Thistle | Muyalchevi | Asteraceae | Native | NA |
| 24 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 26 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 27 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 28 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 29 | *Wrightia tinctoria* | Sweet indrajao, | Paalai | Apocynaceae | Native | LC |
| 30 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 31 | *Pedalium murex* | Large caltrops | Yanainerunji, | Pedaliaceae | Native | NA |
| 32 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 33 | *Barleria acuminata* | Long-flower Barleria | VellaiKurinji | Acanthaceae | Native | NA |
| 34 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 35 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 36 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 37 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 38 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 39 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 40 | *Amaranthus spinosus* | Prickly Amaranth | Mullukkeerai | Amaranthaceae | Exotic | NA |
| 41 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 42 | *Acalypha ciliata* | Fringed Acalypha | --- | Euphorbiaceae | Native | NA |
| 43 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 44 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 45 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 46 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 47 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 48 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 49 | *Aristida adscensionis* | | | Poaceae | Native | NA |
| 50 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 51 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 52 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 53 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |
| 54 | *Urochloa setigera* | Signal grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.6a: List of Insects recorded along the Govindavadi Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Grasshopper species | *Diabolo catantopspinguis* | Acrididae |
| 3 | Grasshopper species | *Spathosternum prasiniferum* | Acrididae |
| 4 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 5 | Water Strider | *Gerris sp.* | Gerridae |
| 6 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 7 | Arborial Bicoloured Ant | *Tetraponerarufo nigra* | Formicidae |
| 8 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 9 | Orange Spider Wasp | *Cryptocheilus bicolor* | Pompilidae |
| 10 | Black and Yellow Mud Dauber Wasp | *Sceliphron caementarium* | Sphecidae |
| 11 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 9.6b: List of Butterflies recorded along the Govindavadi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | African Marbled Skipper | *Gomalia elma* | Pyrginae | Uncommon |
| 2 | Rice Swift | *Borbo cinnara* | Hesperiinae | Common |
| 3 | Common Rose | *Pachlio ptaaristolochiae* | Papilioninae | Common |
| 4 | Crimson Rose | *Pachlio ptahector* | Papilioninae | Common |
| 5 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 6 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 7 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 8 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 9 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 10 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 11 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |

| | | | | |
|---|---|---|---|---|
| 12 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 13 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 14 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 15 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 16 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 17 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 18 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 19 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 20 | Common Crow | *Euploea core* | Danainae | Common |
| 21 | Common Evening Brown | *Melanitis leda* | Satyrinae | Common |
| 22 | Dark-Brand Bushbrown | *Mycalesis mineus* | Satyrinae | Common |
| 23 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 24 | Joker | *Bybliai lithyia* | Biblidinae | Common |
| 25 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 26 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |
| 27 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 28 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.6c: List of Odonata recorded along the Govindavadi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 9.6d: List of Arachnida recorded along the Govindavadi Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 9.6e: List of Fishes recorded form the Govindavadi Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 7 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 9 | *Anabas testudineus* | Climbing erch | Panangottaimeen, Payonerikendaimeen | Anabantidae | DD |
| 10 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.6f: List of Amphibians recorded form the Govindavadi Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |
| 2 | Indian Pond Forg | *Euphlyctis hexadactylus* | Dicroglossidae | Least Concern |

Table 9.6g: List of Reptiles recorded along the Govindavadi Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 3 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 9.6h: List of Birds recorded along the GovindavadiLake

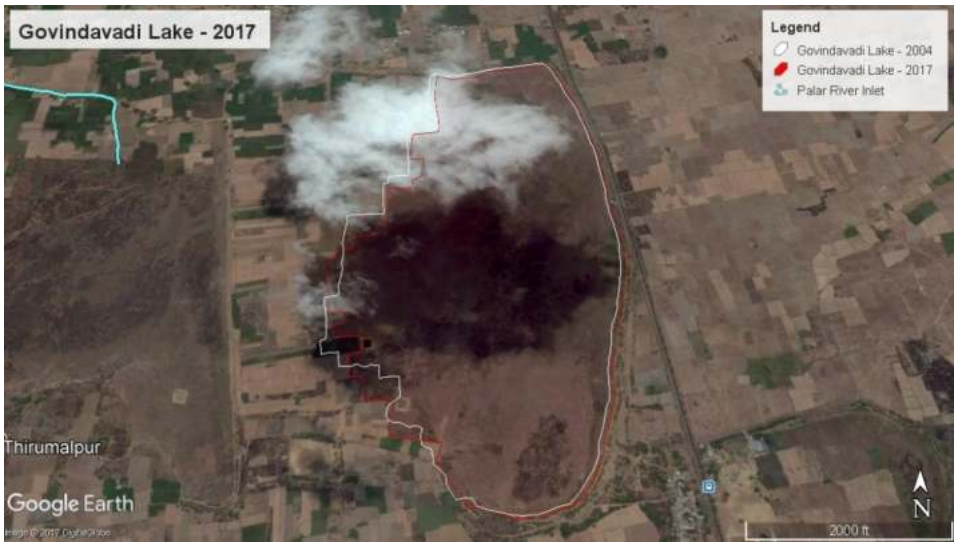
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Gargandy | *Anas querquedula* | Anatidae | Least Concern |
| 2 | Yellow Bittern | *Ixobrychus sinensis* | Ardeidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 5 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 10 | Little Cormorant | *Phalacro coraxniger* | Phalacrocoracidae | Least Concern |
| 11 | Indian Cormorant | *Phalacro coraxfusicollis* | Phalacrocoracidae | Least Concern |
| 12 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 13 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 14 | Green Sandpiper | *Tringao chropus* | Scolopacidae | Least Concern |
| 15 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 16 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 17 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 18 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 19 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 20 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 21 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 22 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 23 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 24 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 25 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 26 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 27 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 28 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 29 | Common Myna | *Acridothere stristis* | Sturnidae | Least Concern |
| 30 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 31 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 32 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 9.6i: List of Mammals recorded along the GovindavadiLake

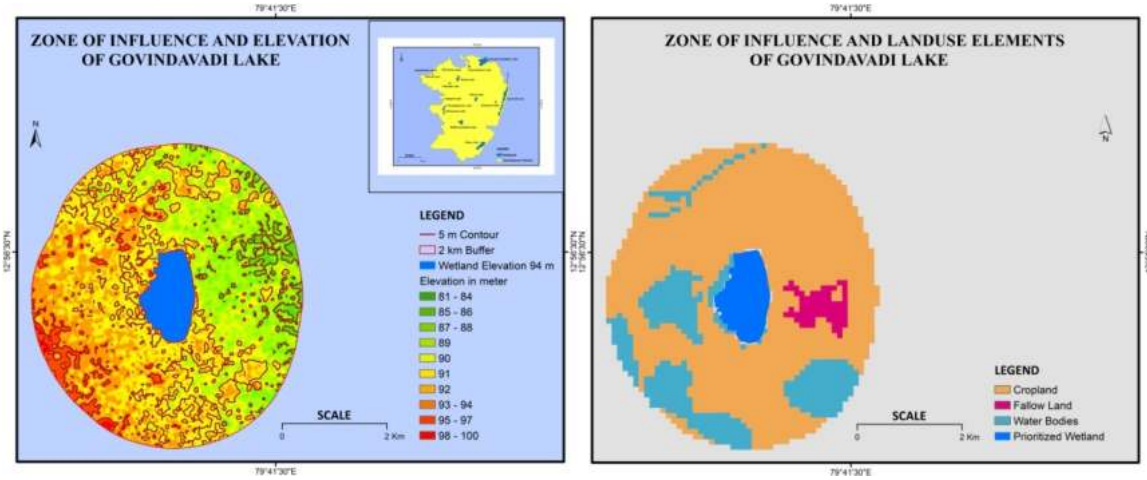
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.4: Comparative Google imagery for Govindavadi Lake**




**Map 9.5: The zone of influence around the Govandavadi Lake.**



**Great Salt Lake**

The Great Salt Lake is between Nemmeli and Kovalam

**Lake Survey Number**: 170, 171, 172, 250/1A1, 154/1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Great Salt Lake (Plate 18).

1.2 Villages that surround the wetland include Nemalikuppam, Perur, Nendi, Kalpakkam, Vadandmeli, Therkupattu, Thiruvadanthari, Semancherikappam, Kovalam.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 37'10.3" N; 12° 39'24.4" N; 12° 42'12.1" N; 12° 44'53.6" N; 12° 47'01.3" N; and Longitude: 080° 11'06.5" E; 080° 11'44.7" E; 080° 12'54.9" E; 080° 13'51.1" E; 080° 14'14.6" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 4122 hectares (Map9.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lakes.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 5 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of permanent nature.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater and the overflow goes to the river.
d) The pH of the water was observed to be alkaline and recorded up to 8.4.
e) The lake has estuarine waters with the salinity recorded at 16.9 ppt at the time of sampling.
f) The wetland was observed to be Mesotrophic as the wetland had floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature was 27.5 °C and the humidity was 64%.

2.7 The area of zone of influence is 18990.7 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Grassland 10 %; | Agriculture 5%; |
| Settlements (rural) 25%; | Urban Settlements 35%; |
| Industrial 15%; | Forest 0% |

2.9. The comparison map of the wetland for the years 2003 and 2017 is given in Map 9.6& 9.7.

**Section III- Biodiversity**

3.1 List of Plant species: 54 species of plants were recorded around the wetland during our visit ( Table 9.7).

3.2 List of animal species: 138 faunal species excluding 4 domestic species were recorded during the survey (Table 9.8a-i).

3.3 Species of Conservation importance: Migratory and Common species of birds were observed during the survey with five threatened category birds recorded during our survey (Table 9.8a-i).

3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plant species including *Enteromorpha sp.* algae was found along the banks formed nearly 5 % of the vegetation cover in the waters.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is marine and used for salt preparation.
4.2 Agriculture is undertaken around the wetland in very few locations mostly the area around is used for salt generation.
4.3 Fishing is undertaken in the wetland and is a traditional community right.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland acts as a sink for sediments.
4.10 The major cultural and religious activities associated with the fisher folk community are performed in the wetland.
4.11 The bird enthusiast visit the wetland.
4.12 There are no agriculture or plantation activities within the wetland but there are instances of capture culture of fish.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a fishery.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity and some recreational fishery is undertaken.
5.2 Major portion of the water is utilized for salt preparation.
5.3 Agriculture is undertaken sporadically around the wetland and not within the wetland.
5.4 Grazing by the cattle was observed. Bovines do not use the wetland for drinking the water.
5.5 The water is not used for domestic purposes washing of fishing crafts and gears is only undertaken.
5.6 The wetland is not used for bathing by live stock.
5.7 Religious and cultural functions are performed along the banks of the wetland.

**Section VI Present and potential threats**

6.1 The wetland does not show a major change in the pattern of water inflow and outflow.
6.2 There is release of sewage, effluents and solidwaste dumping along the banks of the wetland.
6.3 There are agricultural activities around the wetland although at a very low scale.
6.4 There are no invasive plant species but the plantation of terrestrial species along the banks is changing the habitat of the wetland.
6.5 The wetland has idol immersion while solid waste dumping and encroachment activities are observed to increase.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

There are developmental activities that are taking place around the wetland that include setting up of new industries, encroachment and agriculture. Moreover, the release of effluents and sewage has to be regulated and treated before it can spoil the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing. There is increase in the release of effluents and sewage into the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Great Salt Lake


Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi. pp. 241.

Mariappan N. and Richard L. (2006) Studies on freshwater prawns of family Atyidae and Palaemonidae form Kanchipuram and Thiruvallur districts, Tamilnadu, India, including one new species of the Genus *Caridina* H. Milne Edwards, 1837. Rec. zool. Surv. India, Occ. Paper No. 243 : 1-80, (Published by the Director, Zool. Surv. India, Kolkata)

Nagalakshmi R. and Prasanna K. (2016)2015 Flood assessment in Kancheepuram district of Tamil Nadu using GIS Rasayan Journal of Chemistry Vol. 9 (No. 4): 798 - 805

Senthilkumar M., Gnanasundar D. and Sampath Kumar E. (2018) Deciphering Freshwater/Saline Water Interface in and Around Northern Chennai Region, Southern India. In: Saha D., Marwaha S., Mukherjee A. (eds) Clean and Sustainable Groundwater in India. Springer Hydrogeology. Springer, Singapore

Vikas P.A., Sajeshkumar N.K., Thomas P.C. Kajal Chakraborty and Vijayan K. K. (2012)Aquaculture related invasion of the exotic *Artemia franciscana* and displacement of the autochthonous *Artemia* populations form the hypersaline habitats of India Hydrobiologia 684: 129. https://doi.org/10.1007/s10750-011-0976-x


Table 9.7: List of Plant species recorded along the Great Salt Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Abelmoschus angulosus* | --- | KattuSemparuthi | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 5 | *Muntingia calabura* | Jamaica Cherry | Thenpazham | Muntingiaceae | Exotic | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 9 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 10 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 11 | *Lannea coromandelica* | Indian Ash Tree | Oti | Anacardiaceae | Native | NA |
| 12 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 13 | *Bauhinia purpurea* | Purple orchid tree | Nilattiruvatti | Fabaceae | Native | LC |
| 14 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 15 | *Delonix elata* | White Gulmohar, White Poincian | Perungondrai, Vadanarayanan | Fabaceae | Native | LC |
| 16 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 17 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 18 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 19 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 20 | *Senna occidentalis* | Coffee senna | Nattamtakarai, | Fabaceae | Native | NA |
| 21 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 22 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 23 | *Vigna trilobata* | Wild gram,Three lobe leaf | | Fabaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | cowpea | | | | |
| 24 | *Terminalia catappa* | Indian Almond | Nattuvadumai, Vadumai | Combretaceae | Native | NA |
| 25 | *Turnerasu bulata* | White Alder | | Turneraceae | Invasive | NA |
| 26 | *Cucumis dipsaceus* | Hedgehog Cucumber | | Cucurbitaceae | Exotic | NA |
| 27 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 28 | *Sesuvium portulacastrum* | Sea pursland,Shore pursland | Vankaravacci | Aizoaceae | Native | NA |
| 29 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 30 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 31 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 32 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 33 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 34 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 35 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 36 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 37 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 38 | *Datura stramonium* | Common Thorn apple | Oomathai | Solanaceae | Native | NA |
| 39 | *Andrographis echioides* | False waterwillow | Gopuram tangi | Acanthaceae | Native | NA |
| 40 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 41 | *Avicennia marina* | Indian Mangrove,White Mangrove | Venkantal | Acanthaceae | Native | LC |
| 42 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 43 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 44 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 45 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 46 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 47 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 48 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 49 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 50 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 51 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 52 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 53 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 54 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.8a: List of Insects recorded along the Great Salt Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Brown-spotted locust Grasshopper | *Cyrtacantha cristatarica* | Acrididae |
| 2 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 3 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 4 | Mantis Egg | Ootheca | Mantodae |
| 5 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 6 | Water Strider | *Gerris sp.* | Gerridae |
| 7 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 8 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 9 | Transverse lady beetle | *Coccinella transversalis* | Coccinellidae |
| 10 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 11 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 12 | Carpenter Bee | *Xylo copalatipes* | Apidae |
| 13 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 14 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 15 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |
| 16 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 17 | Black and Yellow Mud Dauber Wasp | *Sceliphron caementarium* | Sphecidae |
| 18 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |
| 19 | House fly | *Musca domestica* | Muscidae |

Table 9.8b: List of Diplopoda recorded along the Great Salt Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 9.8c: List of Butterflies recorded along the Great Salt Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 5 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 6 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 7 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 11 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 12 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 13 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 14 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 15 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 16 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 17 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 18 | Common Crow | *Euploea core* | Danainae | Common |
| 19 | Common Evening Brown | *Melanitis leda* | Satyrinae | Common |
| 20 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 21 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 22 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 23 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 24 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.8d: List of Dragonflies and Damselflies recorded along the Great Salt Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 5 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 6 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 7 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 8 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 9 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 9.8e: List of Arachnida recorded along the Great Salt Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 9.8f: List of Fishes recorded form the Great Salt Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 10 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 12 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 13 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 14 | *Sardinella albella* | White Sardinella | Choodai | Clupeidae | LC |
| 15 | *Uca annulipes* | Fiddler crab | Nandu | Ocypodidae | |
| 16 | *Uca perplexa* | Fiddler crab | Nandu | Ocypodidae | |
| 17 | *Uca pugnax* | Atlantic marsh fiddler crab | Nandu | Ocypodidae | |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.8g: List of Reptiles recorded along the Great Salt Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake | *Xenochrophis sp.* | Colubridae | - |

Table 9.8h: List of Birds recorded along the Great Salt Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 3 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 4 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 5 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 6 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 7 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 8 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 9 | Eurasian Spoonbill | *Platalea leucorodia* | Threskiornithidae | Least Concern |
| 10 | Striated Heron | *Butorides striata* | Ardeidae | Least Concern |
| 11 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 12 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 13 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 14 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 15 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 16 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 17 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 18 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 19 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 20 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 21 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 22 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 23 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 24 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 25 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 26 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 27 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 28 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 29 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 30 | Eurasian Curlew | *Numenius arquata* | Scolopacidae | Near Threatened |
| 31 | Common Redshank | *Tringa totanus* | Scolopacidae | Least Concern |
| 32 | Marsh Sandpiper | *Tringa stagnatilis* | Scolopacidae | Least Concern |
| 33 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 34 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 35 | Black-headed Gull | *Chroicocephalus ridibundus* | Laridae | Least Concern |
| 36 | Caspian Tern | *Hydroprogne caspia* | Laridae | Least Concern |
| 37 | Gull-billed Tern | *Gelochelidon nilotica* | Laridae | Least Concern |
| 38 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 39 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 40 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 41 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 42 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 43 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 44 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 45 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 46 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 47 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 48 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 49 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 50 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 51 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 52 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 53 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 54 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 55 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 56 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 57 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 58 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

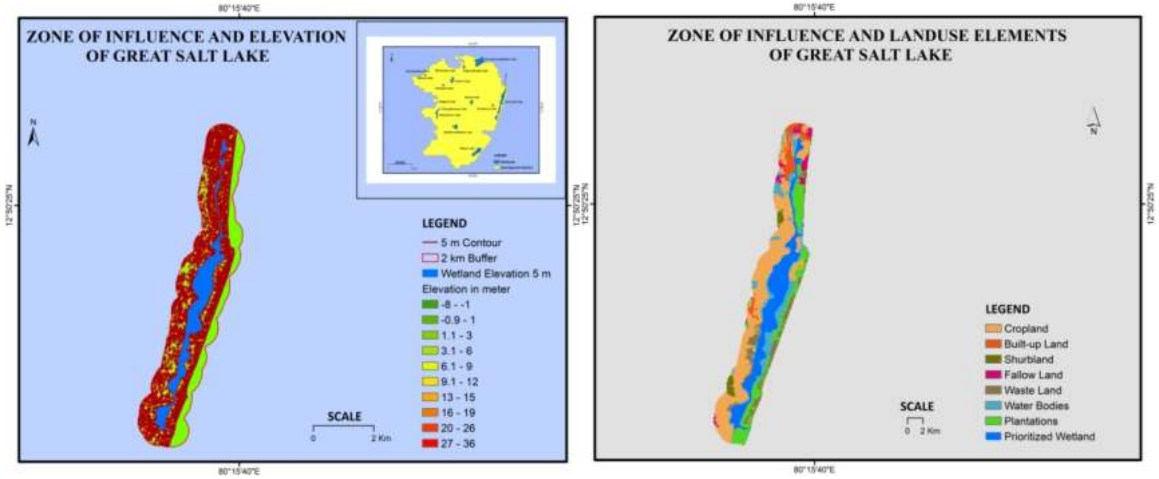
Table 9.8i: List of Mammals recorded along the Great Salt Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.6: Comparative Google imagery for Great Salt Lake**




**Map 9.7: The zone of influence around the Great Salt Lake.**



**Kolavai Lake**

The Kolavai Lake (Latitude: 12° 41'16.9" N and Longitude: 079° 59'22.2" E) is one of the largest lakes, situated in Chengalpet Taluk, Kancheepuram District, Tamil Nadu, India, about 200 metres on the northeast of Chengalpet and close to Pulipakkam village This Lake has an annual storage capacity of 476.69 Mcft and with a depth of 4.59 metres. The total discharging capacity is about 5131 cusecs through by 5 sluices. The surplus water flows into Palar, Neenjal and Madura rivers. It is spread over 894 hectares and presently 12 villages are benefitted by this lake. Around 200 Kgs of fish are harvested per day. The Mahindra World City industrial park drew five million gallons of water from this lake daily. This lake is polluted by the agricultural wastes, domestic sewage, hospital wastes and industrial effluents. The Kolavai Lake also receives water from rain drain canals (27 km in length) during rainy season and in an average of 1450 litres of municipal wastewater enters into the lake per day.

**Lake Survey Number:** 3.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kolavai Lake also known as Chengalpattu lake (Plate 18).

1.2 Villages that surround the wetland include Ammanampakkam, Thondukarai, Pattaravakkam, Tannur, Arisur, Keunavakkam, Elanthoppur, Annumandhari, Kollamedu, Hanumanthai, Thenmelpakkam.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 41'16.9" N; 12° 41'57.5" N; 12° 43'21.2" N; 12° 43'30.2" N and Longitude: 079° 59'22.2" E; 079° 59'34.6" E; 079° 59'59.3" E; 079° 59'42.7" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 584 hectares (Map 9.8).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lakes.

2.3 Based on the secondary information the average depth is 4.5 meters for the wetland.

2.4 The elevation of the wetland is 33 to 38 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of permanent nature with rare occasions of seasonal drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater. It is also know to provide water to Chennai city at times of drought. The over flow also feeds into the Palar river.
d) The pH of the water was observed to be alkaline and recorded between 7.5 and 8.
e) The lake has fresh water with the salinity recorded at 0.317 ppt at the time of sampling.
f) The wetland was observed to be mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages as well as industrial effluents form the adjoining Mahindra Industries and city.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature varied between 22 and 25 °C and the humidity was 80%

2.7 The area of zone of influence is 3340.91 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.9).

2.8 The major land use around the wetland comprised of

Agriculture 5%; Rural human settlements 15%;
Settlements (Urban) 30%; Industries 45%.

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 9.8 & 9.9.

**Section III- Biodiversity**

3.1 List of Plant species: 78 species of plants were recorded around the wetland during our visit (Table 9.9).

3.2 List of animal species:114 animal species excluding 4 domestic species were recorded during the survey (Table 9.10a-h)

3.3 Species of Conservation importance: Three near Threatened species of birds and four species of fish were observed during the survey (Table 9.10a-h)

3.4 Major Plant invasive alien species and extent of invasion: 15 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose due to sewage and effluent contamination. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland to some extent but ground water is used for irrigation.

4.3 Fishery is a major livelihood option in the wetland and fishing is a community right. The fish seed is introduced by the Tamil Nadu Fisheries department and mostly comprises of the common carps.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is used for recreation and boating is one of the activity observed in the wetland. The wetland is frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area and due to deforestation the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several major temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is only majorly used by bird enthusiast but there is also boating undertaken in the wetland.

4.12 There are no agriculture or plantation activities within the wetland but it is a wetland where fishing is the major livelihood with over 150 fishing rafts along the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a vast diversity of fishery although the commercial fishery is done for the cultured edible fish.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping mostly form the Mahendira World city side. But there was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken with permission/ lease form the local village panchayat, the fish is mainly introduced and there has been no assessment of the local or endemic fishery.

5.2 There is no agriculture undertaken within the wetlands.

5.3 Agriculture is undertaken to some extent around the wetland but is not the main practice for the villagers around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is no withdrawal of water for agriculture or fishery purpose.

5.6 The wetland is used for bathing by livestock and boating is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is also an increasing threat to the bird habitat.

6.3 There is increase in the carp population used for commercial fishery altering the characteristics of the wetland.

6.4 There is an increase in the invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form increasing reclamation and encroachment, solid waste dumping. There are existing industries that are releasing effluents that is detrimental the ecosystem as the wetland is becoming a sink for the waste released into the wetland. Moreover there is an increase in the wetland activities.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There is an increase in the activities at the Mahindra world city that are not in sink with the wetland dynamics. These activities although in their initial stages should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Kolavai Lake**


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Martin P. (2017) A survey on seasonal variation of freshwater zooplankton diversity in Kolavai lake, Chengalpattu, Tamil Nadu, India. *World Journal of Pharmaceutical Research*

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Table 9.9. List of Plant species recorded along the Kolavai Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Cocculus diversifolius* | | | Menispermaceae | Introduced | |
| 2 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 3 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 4 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 5 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 6 | *Portulaca oleracea* | Indian Parseland | Paruppukeerai, Pulikkeerai | Portulacaceae | Native | NA |
| 7 | *Abelmoschus angulosus* | --- | KattuSemparuthi | Malvaceae | Native | NA |
| 8 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 9 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 10 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 11 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 12 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 13 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 14 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 15 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 16 | *Dodonaea viscosa* | Hop Bush | Virali | Sapindaceae | Native | NA |
| 17 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 18 | *Bauhinia purpurea* | Purple orchid tree | Nilattiruvatti | Fabaceae | Native | LC |
| 19 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 20 | *Crotalaria pallida* | Smooth Rattlepod | --- | Fabaceae | Native | NA |
| 21 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 22 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 23 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 24 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 25 | *Senna didymobotrya* | Popcorn Cassia | --- | Caesalpiniaceae | Native | NA |
| 26 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 27 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, | Cucurbitaceae | Exotic | NA |
| 28 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 29 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 30 | *Morinda coreia* | Indian Mulberry, | Mannanunai, | Rubiaceae | Native | |
| 31 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 32 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 33 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 34 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 35 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 36 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 37 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 38 | *Pergularia daemia* | Pergularia | Seendhalkodi | Apocynaceae | Native | NA |
| 39 | *Evolvulus alsinoides* | Dwarf morning glory, | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 40 | *Hewittia malabarica* | Clustered Morning Glory | Onaankodi | Convolvulaceae | Invasive | NA |
| 41 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 42 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 43 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 44 | *Utricularia aurea* | Golden Bladderwort | | Lentibulariaceae | Native | LC |
| 45 | *Martynia annua* | Devil's Claws | Thaelkodukkudai | Martyniaceae | Native | NA |
| 46 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 47 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 48 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 49 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 50 | *Vitex negundo* | Chaste Tree | Nocchi | Lamiaceae | Native | NA |
| 51 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 52 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 53 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 54 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 55 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 56 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 57 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni | Euphorbiaceae | Native | NA |
| 58 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 59 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 60 | *Jatropha curcas* | Psychic Nut | Kaattuamanakku | Euphorbiaceae | Invasive | NA |
| 61 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 62 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 63 | *Flueggea leucopyrus* | Bushweed | Mulluppulatti | Phyllanthaceae | Native | NA |
| 64 | *Phyllanthus niruri* | Stone Breaker, | Keezhandlli | Phyllanthaceae | Native | NA |
| 65 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 66 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 67 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, | Arecaceae | Native | NA |
| 68 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 69 | *Pistia stratiotes* | Water cabbage, | Agasatamarai, | Araceae | Native | LC |
| 70 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 71 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 72 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 73 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 74 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 75 | *Echinochloa crus-galli* | Barnyard Grass | | Poaceae | Native | LC |
| 76 | *Sporobolus tenuissimus* | | | Poaceae | Introduced | |
| 77 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |
| 78 | *Salvinia natans* | Floating fern, | | Salviniaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.10 a: List of Insects recorded along the Kolavai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 6 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 9 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 10 | Pharaoh Ant | *Monomorium pharaonis* | Formicidae |
| 11 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 9.10b: List of Butterflies recorded along the Kolavai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |

| | | | | |
|---|---|---|---|---|
| 8 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 9 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 10 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 11 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 12 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 13 | Indian Cupid | *Everes lacturnus* | Polyommatinae | Common |
| 14 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 15 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 16 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 17 | Common Crow | *Euploea core* | Danainae | Common |
| 18 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 19 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 20 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 9.10c: List of Odonata recorded along the Kolavai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Blue Dart | *Pseudagrion microcephalum* | Coenagrionidae | Common |
| 5 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 6 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 7 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 8 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 9 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 10 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 11 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 12 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 9.10 d: List of Arachnida recorded along the Kolavai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 9.10e: List of fish species recorded form the Kolavai Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 4 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 5 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 6 | *Anabas testudineus* | Climbing erch | Panangottaimeen, Payonerikendaimeen | Anabantidae | DD |
| 7 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |
| 8 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayiraimeen | Cobitidae | LC |
| 9 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 10 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 11 | *Stolephorus commersonii* | Commerson's anchovy | Nethili | Engraulidae | NE |
| 12 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 13 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 14 | *Notopterus notopterus* | Featherback | Chottavaalaimeen | Notopteridae | LC |
| 15 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.10 f: List of Reptiles recorded along the Kolavai Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Water Snake | *Xenochrophis piscator* | Colubridae | Least Concern |

Table 9.10 g: List of Birds recorded along the Kolavai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 4 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 12 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 13 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 14 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 15 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 16 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 17 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 18 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 19 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 20 | Laughing Dove | *Stigmatopelia senegalensis* | Columbidae | Least Concern |
| 21 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 22 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 23 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 24 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 25 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 26 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 27 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 28 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 29 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 30 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 31 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 32 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 33 | Indian Paradise-flycatcher | *Terpsiphone paradisi* | Monarchidae | Least Concern |
| 34 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 35 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 36 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 37 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 38 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 39 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 40 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 41 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 42 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 43 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 44 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 45 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 46 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |

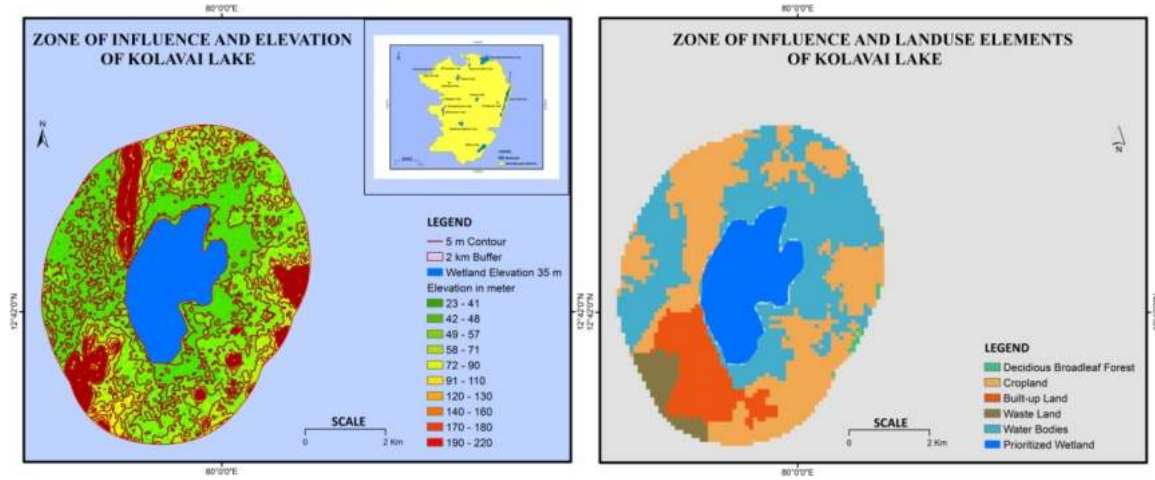
Table 9.10h: List of Mammals recorded along the Kolavai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.8: Comparative Google imagery for Kolavai Lake**




**Map 9.9: The zone of influence around the Kolavai lake.**



**Kooram Lake**

**Lake Survey Number**: 785

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kooram Lake (Plate 19).

1.2 Villages that surround the wetland include Kooram, Aliyapakkam, Seranai, Vathiyur, Pudhupakkam.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 54'04.5" N; 12° 53'51.8" N; 12° 53'50.4" N; 12° 53'54.0" N and Longitude: 079° 39'15.1" E; 079° 39'06.4" E; 079° 38'53.6" E; 079° 38'41.9" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 137 hectares (Map 9.10).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Tank.

2.3 Based on the secondary information the average depth is 4 meters for the wetland.

2.4 The elevation of the wetland is 61 to 69 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area. This is part of the Pallar river system.
b) The water in the wetland is mostly of intermittent nature.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater and the overflow goes to the river.
d) The pH of the water was observed to be alkaline and recorded up to 7.35.
e) The lake has fresh water with the salinity recorded at 0.138 ppt at the time of sampling.
f) The wetland was observed to be closer to mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature varied between 22.5 and 30.9 °C and the humidity was 68%

2.7 The area of zone of influence is 2308.82 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Agriculture 90%, | Settlements (rural) 10% |
| Settlements (Urban) 0% | Forest 0% |
| Grassland 0% | Industries 0% |

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 9.10& 9.11.

**Section III- Biodiversity**

3.1 List of Plant species:71 species of plants were recorded around the wetland during our visit (Table 9.11).

3.2 List of animal species:125 faunal species including 2 domestic species were recorded during the survey (List attached - Table 9.12a-j)

3.3 Species of Conservation importance: Common species of birds and three threatened species of fish were observed during the survey (Table 9.12a-j)

3.4 Major Plant invasive alien species and extent of invasion: 13 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion - no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is undertaken by a few families. The seeds are introduced by the fisheries department.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge and overflow form the wetlands passes to the Pallar river.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although it is not for any the commercial purpose.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is little commercial fishing activity and some recreational fishery is undertaken. Fishing is a community right and is under the lease given every year.
5.2 Major portion of the water is utilized for irrigation
5.3 Agriculture is undertaken around the wetland and not within the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition as per the information form the locals.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.
6.5 The wetland has idol immersion and solid waste dumping and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Kooram Lake


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Table 9.11: List of Plant species recorded along the Kooram Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nymphaea nouchali var. pubescens* | Pink water lily,Pink lotus | Vellambal | Nymphaeaceae | Native | LC |
| 2 | *Nymphaea odorata* | Meghalaya Red Water Lily | | Nymphaeaceae | Native | LC |
| 3 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 4 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 5 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 6 | *Portulaca oleracea* | Indian Parseland | Paruppukeerai, Pulikkeerai | Portulacaceae | Native | NA |
| 7 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 8 | *Ceiba pentandra* | Kapok, Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 9 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 10 | *Malvastrumcoromandelianum subsp. coromandelianum* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 11 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 12 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 13 | *Oxalis corniculata* | Creeping Wood Sorrel | Puliyarai, Paliakiri | Oxalidaceae | Invasive | NA |
| 14 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 15 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 16 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 17 | *Indigofera prostrata* | Three leaf indigo | | Fabaceae | Native | NA |
| 18 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 19 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 20 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 21 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22 | *Sesbania grandiflora* | Agati | Sevvagatti, muni | Fabaceae | Native | NA |
| 23 | *Sesbania sesban* | Common Sesban, Egyptian Rattlepod | | Fabaceae | Native | NA |
| 24 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 25 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 26 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 27 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 28 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 29 | *Ageratina adenophora* | Catweed, crofton weed, Mexican devil, sticky eupatorium, sticky snakeroot, | | Asteraceae | Naturalized | |
| 30 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 31 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 32 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 33 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 34 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 35 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 36 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 37 | *Pergulari adaemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 38 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 39 | *Evolvulus alsinoides* | Dwarf morning glory,Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 40 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 41 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 42 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 43 | *Barleria buxifolia* | Box-Leaved Barleria | Kattimullu, Rosmullippuntu | Acanthaceae | Native | NA |
| 44 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 45 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 46 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 47 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 48 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 49 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 50 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 51 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 52 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 53 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 54 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 55 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 56 | *Phyllanthus maderaspatensis* | Madras Leaf flower | Nilandlli | Phyllanthaceae | Native | NA |
| 57 | *Asparagus racemosus* | Satawari | Tannirvittan | Asparagaceae | Native | NA |
| 58 | *Sansevieria cylindrica* | Spear sansevieria,Spearsanseviera | | Asparagaceae | Introduced | NA |
| 59 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 60 | *Cyanotis arachnoidea* | Grass of the Dew | Vallukkai | Commelinaceae | Native | NA |
| 61 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 62 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kottikizhangu | Aponogetonaceae | Native | LC |
| 63 | *Cyperus dubius* | White Water Sedge | Velutthanirbasi | Cyperaceae | Native | LC |
| 64 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 65 | *Apluda mutica* | Mauritian Grass | | Poaceae | Native | NA |
| 66 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 67 | *Eragrostis amabilis* | Japandse Lovegrass | | Poaceae | Native | NA |
| 68 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 69 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 70 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |
| 71 | *Azolla caroliniana* | Mosquito fern,Water velvet | | Salviniaceae | Introduced | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.12a: List of Insects recorded along the Kooram Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 6 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 7 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 8 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 9 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 10 | Carpenter Bee | *Xylo copalatipes* | Apidae |
| 11 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 12 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 13 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 14 | Ant species | *Camponotus sp.* | Formicidae |
| 15 | Indian Robber fly | *Asilidae sp.* | Asilidae |

Table 9.12b: List of Diplopoda recorded along the Kooram Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Millipede | *Spinotarsus colosseus* | Odonotopgidae |
| 2 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 9.12c: List of Butterflies recorded along the Kooram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Continental Swift | *Parnara ganga* | Hesperiinae | Common |
| 2 | Large Branded Swift | *Pelopidas subochracea* | Hesperiinae | Uncommon |
| 3 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 4 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 5 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 6 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 7 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 11 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 12 | Psyche | *Leptosia nina* | Pierinae | Common |
| 13 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 14 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 15 | Lesser Grass Blue | *Zizin aotis* | Polyommatinae | Common |
| 16 | Tiny Grass Blue | *Zizula hylax* | Polyommatinae | Common |
| 17 | Lime Blue | *Chilades lajus* | Polyommatinae | Common |
| 18 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 19 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 20 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 21 | Common Crow | *Euploea core* | Danainae | Common |
| 22 | Common Evening Brown | *Melanitis leda* | Satyrinae | Common |
| 23 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 24 | Common Leopard | *Phalanta phalantha* | Heliconiinae | Common |
| 25 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 26 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 27 | Common Castor | *Ariadne merione* | Biblidinae | Common |
| 28 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 29 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |
| 30 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 31 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 32 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.12d: List of Odonata recorded along the Kooram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacode strivialis* | Libellulidae | Common |
| 7 | Green Marsh Hawk | *Orthetrums abina* | Libellulidae | Common |
| 8 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 9.12e: List of Arachnida recorded along the Kooram Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |
| 3 | Wolf Spider | *Lycosidae sp.* | Lycosidae |

Table 9.12f: List of fishes recorded form the Kooram Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyng odonidella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 7 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 8 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 9 | *Anabas testudineus* | Climbing erch | Panangottaimeen, Payonerikendaimeen | Anabantidae | DD |
| 10 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayiraimeen | Cobitidae | LC |
| 11 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 12 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 13 | *Stolephorus commersonii* | Commerson's anchovy | Nethili | Engraulidae | NE |
| 14 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 15 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |
| 16 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |
| 17 | *Sphyraena barracuda* | Great barracuda | Seelameen | Sphyraenidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.10g: List of Amphibians recorded form the Kooram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

Table 9.10h: List of Reptiles recorded along the Kooram Lake

| S. No | Common Name | Scientific Name | Family | |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 3 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 4 | Snake | *Xenochrophis sp.* | Colubridae | - |

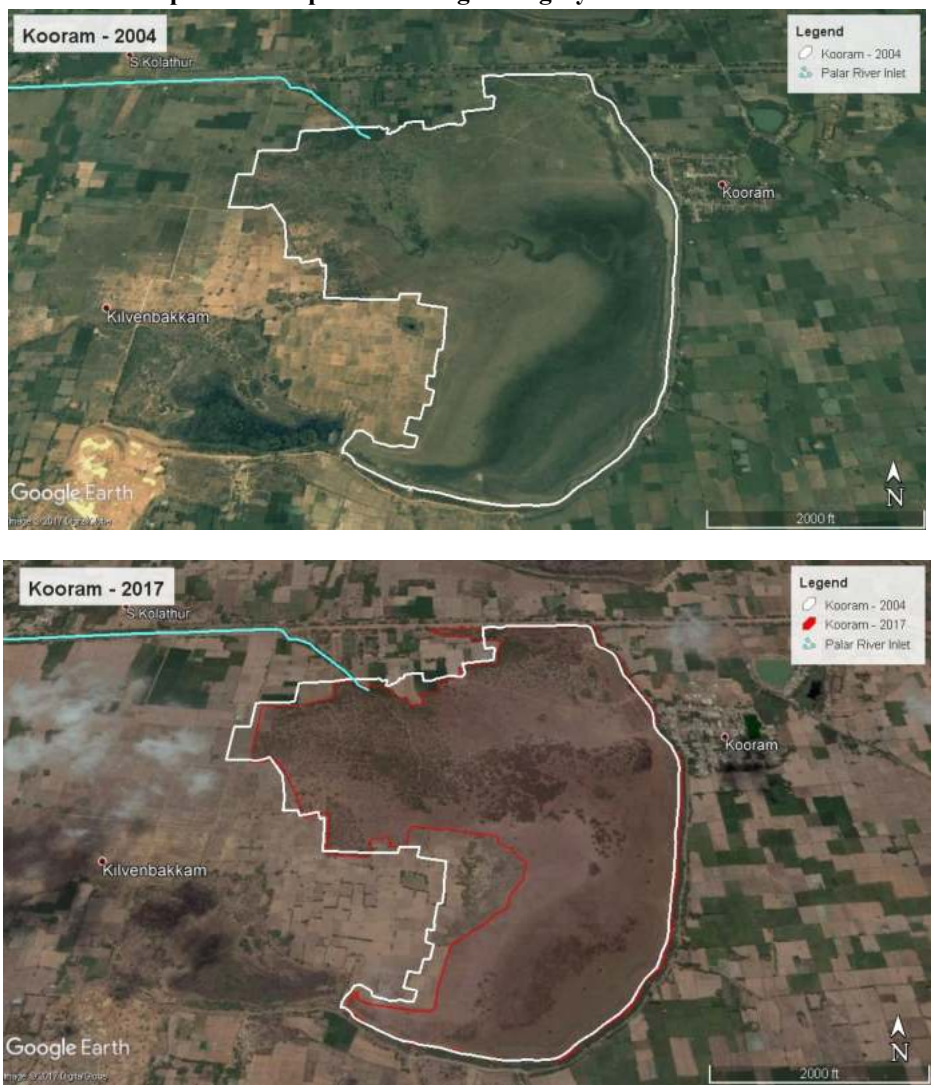
Table 9.10i: List of Birds recorded along the Kooram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Asian Openbill | *Anastomusos citans* | Ciconiidae | Least Concern |
| 4 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 10 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 11 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 12 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 13 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 14 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 15 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 16 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 17 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 18 | Green Sandpiper | *Tringao chropus* | Scolopacidae | Least Concern |
| 19 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 20 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 21 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 22 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 23 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 24 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 25 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 26 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 27 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 28 | Indian Golden Oriole | *Oriolus kundoo* | Oriolidae | Least Concern |
| 29 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 30 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 31 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 32 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 33 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 34 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 35 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 36 | Rosy Starling | *Pastor roseus* | Sturnidae | Least Concern |
| 37 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 38 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 39 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 40 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

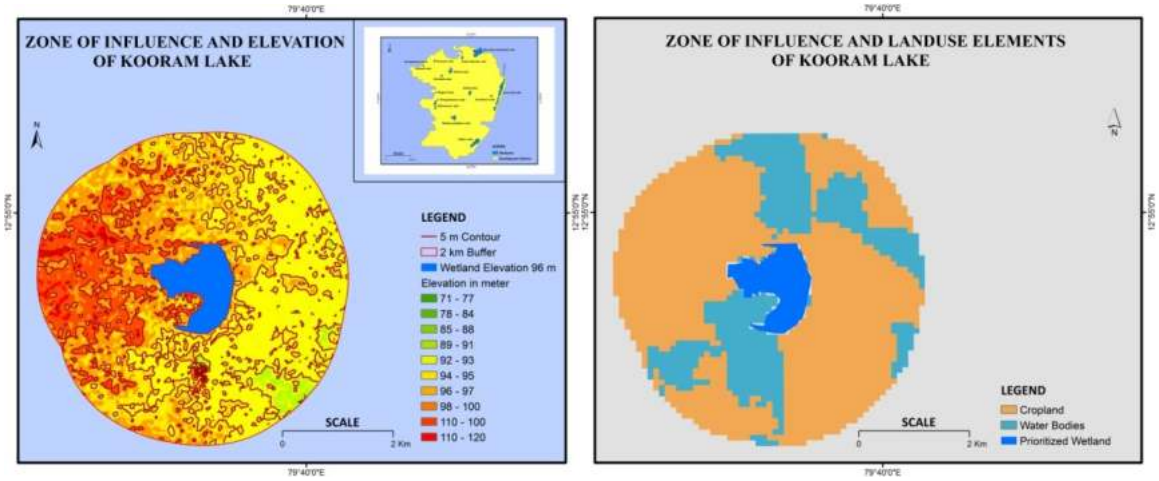
Table 9.10j: List of Mammals recorded along the Kooram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.10: Comparative Google imagery for Kooram Lake**




**Map 9.11: The zone of influence around the Kooram Lake.**



**Madhuranthakam Lake**

**Madhuranthakam** is a town and a municipality in Kancheepuram district, the town is known for the man-made and one of the largest lake in Tamil Nadu, the Madhuranthakam lake and it is located very near to the state capital Chennai. It is believed to be built by the Chola King UthamaChozha, also called as Madhuranthakar, during his reign. Madhuranthakam lake, is a lake spread over 2400 acres Eri Katha Ramar temple is on the banks of the huge Madhuranthakam lake.

**Lake Survey Number**: 147 1/2

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Madhuranthakam Lake (Plate 19).

1.2 Villages that surround the wetland include Madhuranthakam, Malaipalayam Bangalanagar, Ari Nagar, Periyanagar, Adisanthoppur, Agravaram, Pasumbur, Mocheri, Thondoripet, Vedathangal, Valaipudhur, Pillanchi.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 31'49.6" N; 12° 30'32.6" N; 12° 13'35.2" N; 12° 30'40.2" N and Longitude: 079° 53'12.3" E; 079° 52'21.9" E; 079° 52'24.5" E; 079° 52'58.5" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 893 hectares (Map 9.12).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Dam/ Reservoir.

2.3 Based on the secondary information the average depth is 5.5 meters for the wetland.

2.4 The elevation of the wetland is 29 to 36 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of permanent nature with rare occasions of seasonal drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater. The over flow also feeds into the Pallar river.
d) The pH of the water was observed to be alkaline and recorded up to 8.5
e) The lake has fresh water with the salinity recorded at 0.209 ppt at the time of sampling.
f) The wetland was observed to be closer to oligotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages as well as small quantity of industrial effluents form the adjoining warehouses.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature varied between 29.1 and 29.5 °C and the humidity was 58%

2.7 The area of zone of influence is 4300.68 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.13).

2.8 The major land use around the wetland comprised of 30% forest, 50% agriculture, 15% Grassland and 5% Settlements (rural).

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 9.12& 9.13.

**Section III- Biodiversity**

3.1 List of Plant species: 71 species of plants were recorded around the wetland during our visit (Table 9.13).

3.2 List of animal species: 96 animal species excluding 4 domestic species were recorded during the survey (Table 9.14a-h).

3.3 Species of Conservation importance - Two near Threatened species of birds and fish were observed during the survey (Table 9.14a-h).

3.4 Major Plant invasive alien species and extent of invasion –Ten invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion - no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailedstudy.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland and the lake water is used for irrigation.

4.3 Fishery is a major livelihood option in the wetland and fishing is a community right. The fish seed is introduced by the Tamil Nadu Fisheries department and mostly comprises of the common carps. There is also a good variety of local fish in the wetland.

4.4 The wetland is not used for any aquatic food cultivation

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is used for recreation as the Vedanthangal Bird Sanctuary is also close by the birds also flock to this wetland. The wetland is frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge and overflow form the wetlands also contributes to the Pallar river.

4.9 There is significant runoff form the surrounding catchment area and due to deforestation the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several major temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is only majorly used by bird enthusiast.

4.12 There are no agriculture or plantation activities within the wetland but it is a wetland where fishing is the major livelihood.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a vast diversity of fishery although the commercial fishery is done for the cultured edible fish.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken with permission/ lease form the local village panchayat, the fish is mainly introduced and there has been no assessment of the local or endemic fishery.

5.2 There is agriculture undertaken within the wetlands.

5.3 Agriculture is undertaken within the wetland we also observed banana, coconut and sugarcand plantations within the wetlands.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture as well as for fishery purpose.

5.6 The wetland is used for bathing by livestock and boating is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow as it receives the overflow form Vedanthangal lake and the outflow goes to the Pallar river.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.

6.3 There is increase in the carp population used for commercial fishery altering the characteristics of the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.

6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. Siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a minimal threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Madhuranthakam Lake

Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

Mariappan N. and Richard L. (2006) Studies on freshwater prawns of family Atyidae and Palaemonidae form Kancheepuram and Thiruvallur districts, Tamilnadu, India, including one new species of the Genus Caridina H. Milne Edwards, 1837. Rec. Zool. Surv. India, Occ. Paper No. 243 : 1-80, (Published by the Director, Zool. Surv. India, Kolkata)

PWD (2000) Groundwater perspectives: a profile of Kancheepuram District, Tamil Nadu. Public Works Department, Tamil Nadu, June, 220 pp

Rajmohan N. and Elango L. (2005) Distribution of Iron, Mangandse, Zinc and Atrazine in Groundwater in Parts of Palar and Cheyyar River Basins, South India Environ Monit Assess 107: 115. https://doi.org/10.1007/s10661-005-5307-0

Rajmohan N. and Elango L. (2005) Nutrient chemistry of groundwater in an intensively irrigated region of southern India. Environ Geol 47: 820. https://doi.org/10.1007/s00254-004-1212-z

Senthilkumar M. and Elango L. (2001) Numerical Simulation of Groundwater Flow Regime in a Part of The Lower Palar River Basin, Southern India Modelling in Hydrogeology, Eds: L. Elango and R. Jayakumar, UNESCO-IHP, Allied Publishers, pp.115-126

Senthilkumar M. and Elango L. (2004) Three-dimensional mathematical model to simulate groundwater flow in the lower Palar River basin, southern India Hydrogeology Journal 12: 197. https://doi.org/10.1007/s10040-003-0294-0

Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern IndiaHydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0

Table 9.13: List of Plant species recorded along the Madhuranthakam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Portulaca oleracea* | Indian Parseland | Paruppukeerai, Pulikkeerai | Portulacaceae | Native | NA |
| 4 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 5 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 6 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 7 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 10 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 11 | *Cardio spermumhalicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 12 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, | Fabaceae | Native | NA |
| 13 | *Cajanus scarabaeoides* | Showy Pigeonpea | Kaattu-kollu Chedi | Fabaceae | Native | LC |
| 14 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 15 | *Crotalaria globosa* | Spherical Rattlepod | | Fabaceae | Native | |
| 16 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 17 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 18 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 19 | *Diplocyclos palmatus* | Lollipop Climber | Aiviralkkovai | Cucurbitaceae | Native | NA |
| 20 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 21 | *Oldenlandia umbellata* | Chay Root, Indian madder, Choy root | Chayam, Chayaver, Emboorel, Imbura-ver | Rubiaceae | Native | |
| 22 | *Biden spilosa* | Beggar Tick | Mukkuthi | Asteraceae | Exotic | NA |
| 23 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 24 | *Emilia sonchifolia* | Purple Sow Thistle | Muyalchevi | Asteraceae | Native | NA |
| 25 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 26 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 27 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 28 | *Hemidesmus indicus* | Indian Sarsaparilla | Nannari, Sugandipala | Apocynaceae | Native | NA |
| 29 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 30 | *Pergulari adaemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 31 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 32 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 33 | *Physalis angulata* | Cutleaf Ground Cherry | | Solanaceae | Native | LC |
| 34 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 35 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 36 | *Barleria acuminata* | Long-flower Barleria | VellaiKurinji | Acanthaceae | Native | NA |
| 37 | *Ruellia patula* | Spreading Ruellia | Grandhinayakam | Acanthaceae | Native | NA |
| 38 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 39 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 40 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 41 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 42 | *Commicarpus chinensis* | Diffuse Hogweed | KodiMinnai, Mukkuttikkodi | Nyctaginaceae | Native | NA |
| 43 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 44 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 45 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 46 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 47 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 48 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 49 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 50 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 51 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 52 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 53 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 54 | *Breyniavitis-idaea* | Mountain Coffee Bush | | Phyllanthaceae | Native | NA |
| 55 | *Flueggea leucopyrus* | Bushweed | Mulluppulatti | Phyllanthaceae | Native | NA |
| 56 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 57 | *Ficusulm ifolia* | Hairy fig, Devil fig | Peyatti | Moraceae | Native | VU |
| 58 | *Hydrilla verticillata* | Water Thyme, hydrilla | amiranappaci, cikavalakam, cimpaka | Hydrocharitaceae | Native | LC |
| 59 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 60 | *Cyanotis arachnoidea* | Grass of the Dew | Vallukkai | Commelinaceae | Native | NA |
| 61 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 62 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 63 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 64 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 65 | *Cyperuse sculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 66 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 67 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 68 | *Enteropogon dolichostachyus* | Finger grass | | Poaceae | Native | NA |
| 69 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 70 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 71 | *Tetrapogon roxburghiana* | Windmill grass | | Poaceae | Native | |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, NA -Not Assessed

Table 9.14a: List of Insects recorded along the Madhuranthakam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Carpenter Bee | *Xylo copalatipes* | Apidae |
| 6 | Giant Honey Bee | *Apis dorsata* | Apidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 9.14b: List of Diplopoda recorded along the Madhuranthakam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 9.14c: List of Butterflies recorded along the Madhuranthakam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 5 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 6 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 7 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 11 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 12 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 13 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 14 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 15 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 16 | Common Crow | *Euploea core* | Danainae | Common |
| 17 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 18 | Joker | *Byblia ilithyia* | Biblidinae | Common |

| | | | | |
|---|---|---|---|---|
| 19 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 20 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 21 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 22 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.14d: List of Odonata recorded along the Madhuranthakam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 7 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 8 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 9 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 10 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |
| 11 | Long-Legged Marsh Glider | *Trithemi spallidinervis* | Libellulidae | Common |

Table 9.14e: List of Reptiles recorded along the Madhuranthakam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 9.14f: List of Fishes recorded form the Madhuranthakam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 5 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 6 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 7 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayiraimeen | Cobitidae | LC |
| 12 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 13 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 14 | *Notopterus notopterus* | Featherback | Chottavaalaimeen | Notopteridae | LC |
| 15 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |
| 16 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 9.14g: List of Birds recorded along the Madhuranthakam Lake

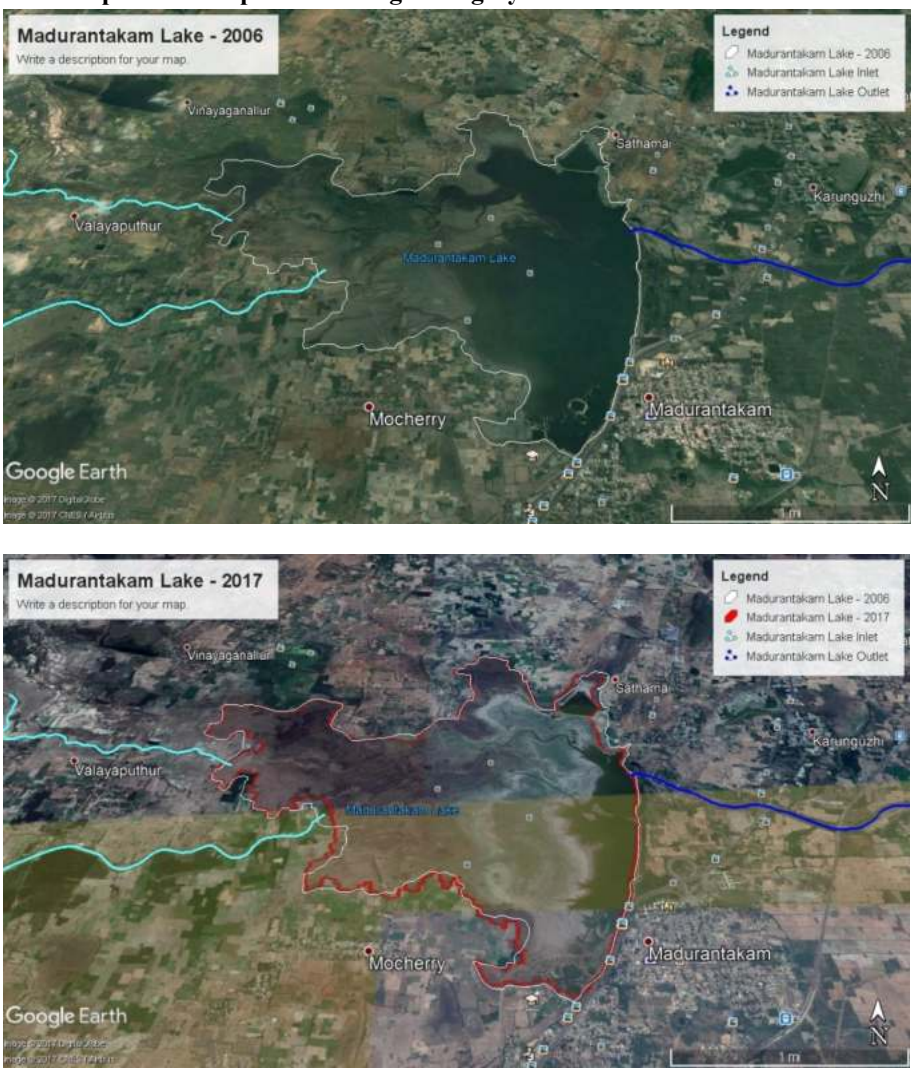
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 11 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 12 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 13 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 14 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 15 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 16 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 17 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 18 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 19 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 20 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 21 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 22 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 23 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 24 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 25 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 26 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 27 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 28 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 29 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 30 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 31 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 32 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

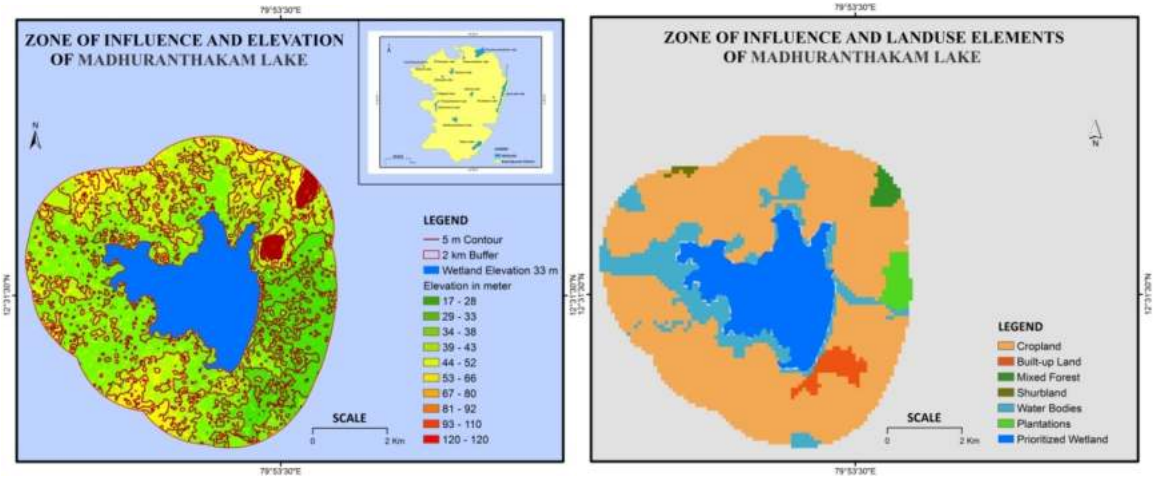
Table 9.14h: List of Mammals recorded along the Madhuranthakam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.12: Comparative Google imagery for Madhuranthakam Lake**




**Map 9.13: The zone of influence around the MadhuranthakamLake.**



**Magaral Lake**

**Lake survey number**: 454

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Magaral Lake (Plate 20)

1.2 Villages that surround the wetland include Magaral, Sithalapakkam, Poonaithangal, Arasanipalai.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 42'12.2" N; 12° 42'12.3" N; 12° 42'12.1" N and Longitude: 079° 44'34.0" E; 079° 44'34.0" E; 079° 44'26.8" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 105 hectares (Map 9.14).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 1 meters for the wetland.

2.4 The elevation of the wetland is 67 to 69 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and direct inflow form the river Cheyyar.

b) The water in the wetland is mostly of intermittent nature.

c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The wateralso helps in replenishing the groundwater.

d) The wetland is covered withdense vegetation hence the water and soil could not be collected.

e) The lake has fresh water as it receives water from Cheyyar river but the water in the lake was not assessed due to inassecibility to the water body

f) The wetland was observed to be Eutrophic as the wetland was observed to be covered with floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.

b) The atmospheric temperature varied between 24.3 and 25.8 °C and the humidity was 70%.

2.7 The area of zone of influence is 2116.34 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.15).

2.8 The major land use around the wetland comprised of

Agriculture 60%; Settlements (rural) 10%;

Grass Land / Shrubland 30%; Industries 0%

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 9.14 & 9.15.

**Section III- Biodiversity**

3.1 List of Plant species: 57 species of plants were recorded around the wetland during our visit (Table 9.15).

3.2 List of animal species: 85 faunal species including 2 domestic species were recorded during the survey (Table 9.16a-h).

3.3 Species of Conservation importance: Except 2 near threatened fish species all the species observed during the survey were mostly common (Table9.16a-h).

3.4 Major Plant invasive alien species and extent of invasion –Ten invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed almost 90 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion : no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is never undertaken in the wetland as it is mostly seasonal.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland acts as a sink for sediments.
4.10 The wetland has a few small temples along its bank and a few cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although it is not for any the commercial purpose.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial or recreational fishing activity.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland and within the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by live stock is undertaken.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has solid waste dumping and encroachment activities. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some developmental activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Magaral Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. Pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

Mariappan N. and Richard 1. (2006) Studies on freshwater prawns of family Atyidae and Palaemonidae form Kancheepuram and Thiruvallur districts, Tamilnadu, India, including one new species of the Genus *Caridina* H. Milne Edwards, 1837. Rec. Zool. Surv. India, Occ. Paper No. 243 : 1-80, (Published by the Director, Zool. Surv. India, Kolkata)

Nagalakshmi R. and Prasanna K. (2016)2015 Flood assessment in Kancheepuram district of Tamil Nadu using GIS Rasayan Journal of Chemistry Vol. 9 (No. 4): 798 - 805

PWD (2000) Groundwater perspectives: a profile of Kancheepuram District, Tamil Nadu. Public Works Department, Tamil Nadu, June, 220 pp

Rajmohan N. and Elango L. (2005) Distribution of Iron, Mangandse, Zinc and Atrazine in Groundwater in Parts of Palar and Cheyyar River Basins, South India Environ Monit Assess 107: 115. https://doi.org/10.1007/s10661-005-5307-0

Rajmohan N. and Elango L. (2005) Nutrient chemistry of groundwater in an intensively irrigated region of southern India. Environ Geol 47: 820. https://doi.org/10.1007/s00254-004-1212-z

Senthilkumar M. and Elango, L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern IndiaHydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0


Table 9.15: List of Plant species recorded along the Magaral Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattukasturi | Malvaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Ceiba pentandra* | Kapok, Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 5 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 11 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 12 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 13 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 14 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 15 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 16 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 17 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 18 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 19 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 20 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 21 | *Ixora coccinea* | Torchwood Tree | Culuntu, Koran | Rubiaceae | Native | NA |
| 22 | *Morinda coreia* | Indian Mulberry, Morinda | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 23 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 24 | *Ageratina adenophora* | Catweed, crofton weed, | | Asteraceae | Naturalized | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Mexican devil, sticky eupatorium, sticky snakeroot, | | | | |
| 25 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 26 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 27 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 28 | *Emilia sonchifolia* | Purple Sow Thistle | Muyalchevi | Asteraceae | Native | NA |
| 29 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 30 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 31 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 32 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 33 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 34 | *Pergulari adaemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 35 | *Hewittia malabarica* | Clustered Morning Glory | Onaankodi, Onan Kodi | Convolvulaceae | Invasive | NA |
| 36 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 37 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 38 | *Priva cordifolia* | Heart-Leaf Velvet Bur | | Verbenaceae | Native | NA |
| 39 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 40 | *Commicarpus chinensis* | Diffuse Hogweed | KodiMinnai, Mukkuttikkodi | Nyctaginaceae | Native | NA |
| 41 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 42 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 43 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 44 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 45 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 46 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 47 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 48 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 49 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 50 | *Commelinadiffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 51 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 52 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kottikizhangu | Aponogetonaceae | Native | LC |
| 53 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 54 | *Dactylocteniuma egyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 55 | *Eragrostis amabilis* | Japandse Lovegrass | | Poaceae | Native | NA |
| 56 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 57 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.16a: List of Insects recorded along the Magaral Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 9.16b: List of Butterflies recorded along the Magaral Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 11 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 12 | Psyche | *Leptosia nina* | Pierinae | Common |

| | | | | |
|---|---|---|---|---|
| 13 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 14 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 15 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 16 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 17 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 18 | Common Crow | *Euploea core* | Danainae | Common |
| 19 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 20 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 21 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 22 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 23 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.16c: List of Odonata recorded along the Magaral Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 9.16d: List of Arachnida recorded along the Magaral Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 9.16e: List of Fishes recorded form the Magaral Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 5 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 6 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 10 | *Anabas testudineus* | Climbing erch | Panangottaimeen, Payonerikendaimeen | Anabantidae | DD |
| 11 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |
| 12 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayiraimeen | Cobitidae | LC |
| 13 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 14 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 15 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 16 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 17 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 18 | *Notopterus notopterus* | Featherback | Chottavaalaimeen | Notopteridae | LC |
| 19 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |
| 20 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |
| 21 | *Sphyraena barracuda* | Great barracuda | Seelameen | Sphyraenidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.16f: List of Reptiles recorded along the Magaral Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake | *Xenochrophis sp.* | Colubridae | - |

Table 9.16g: List of Birds recorded along the Magaral Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 6 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 7 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 8 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 9 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 10 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 11 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 14 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 15 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 16 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 17 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 18 | Common Myna | *Acridothere stristis* | Sturnidae | Least Concern |
| 19 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 20 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 21 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

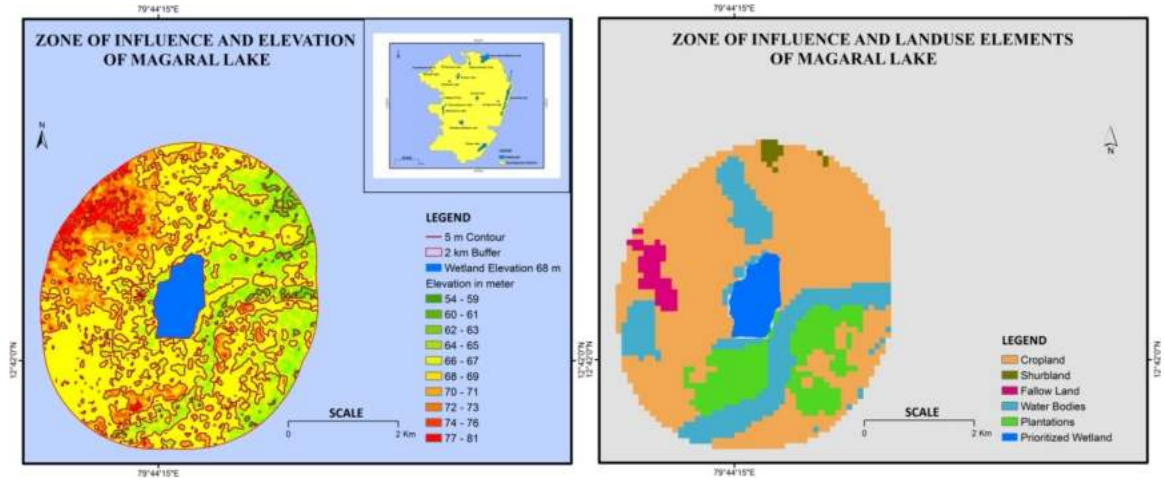
Table 9.16h: List of Mammals recorded along the Magaral Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.14: Comparative Google imagery for Magaral Lake**




**Map 9.15: The zone of influence around the MagaralLake.**



**Odiyur Lake**

**Lake Survey Number**: 352.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Mudliyarkuppam lake, also called Odiyur lake,(Plate 20).

1.2 Villages that surround the wetland include Otyhiyur, Nainarkuppan, Pannayur and Vilambur.

1.3 & 1.4 The wetland is based in Sayur taluka in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 20'06.3" N; 12° 19'54.5" N; 12° 19'47.8" N; 12° 19'37.6" N; 12° 20'54.3" N; 12° 20'12.5" N and Longitude: 080° 00'53.0" E; 080° 00'58.8" E; 080° 01'03.5" E; 080° 01'10.6" E; 080° 03'18.8" E; 080° 02'45.8" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of Govt of India with the undertaking by PWD of Kancheepuram district.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 2172 hectares (Map 9.16).

2.2 The Wetland type - the wetland belongs to the Natural (Coastal) category in the sub category intertidal creek.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 5 to 14 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and connection With the Bay of Bengal.
b) The water in the wetland is mostly of permanent nature.
c) The water from the wetlands forms a main source for the fishing activity. The water also helps in replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded between 8.53 and 8.28.
e) The lake has fresh water with the salinity recorded at 26.8 ppt.
f) The wetland is saline ecosystem. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfallfor the month of August in Kancheepuram was 68.2 mm.
b) The atmospheric temperature ranged between 29.3 and 31 °C and the humidity was 62 and 65 %

2.7 The area of zone of influence- 6352.14 hectares with a fixed buffer area of 2 kms around the wetlandThe wetland is close to the coast and has villages around the wetland (Map 9.17).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Agriculture30%; | Grasslands/shrubland0%; |
| SettlementsUrban30%; | Settlements Rural 30%; |
| Industrial10%; | Forest 0%. |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 9.16 & 9.17.

**Section III- Biodiversity**

3.1 List of Plant species: 49 species of plants were recorded around the wetland during our visit (Table 9.17).

3.2 List of animal species: 61 faunal species including 4 domestic species were recorded during the survey (Table 9.18a-f)

3.3 Species of Conservation importance: Migratory and Common species of birds were observed during the survey with one threatened category bird recorded during our survey (Table 9.18a-f).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Ipomoea sp,* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: The wetland is in a much-polluted status with very minimal fishery and mostly comprises of carps.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose.
4.2 Agriculture is not undertaken around the wetland and minimal water is used for irrigation.
4.3 Fishing is undertaken in the wetland as a community right.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is a site for recreation and is frequented by nature enthusiast for bird watching as it is also a bird sanctuary.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast visit the wetland.
4.12 There are no agriculture or plantation activities within the wetland
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a fishery naturally form the Bay of Bengal.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity and some recreational fishery is undertaken.
5.2 The water is not ustilised for drinking or washing as it a saline ecosystem.
5.3 Agriculture is undertaken around the wetland at a distance form the wetland and not within the wetland.
5.4 Grazing by the cattle was observed.
5.5 The water is not used for domestic purposes.
5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.
5.7 Religious and cultural functions are performed along the banks of the wetland.
The sap of borassus plant is extracted and sold for consumption.

**Section VI Present and potential threats**

6.1 The wetland show a major change in the pattern of water inflow and outflow.
6.2 There is release of sewage, effluents and solidwaste dumping along the banks of the wetland.
6.3 There is a trend of increase in industrialization and urbanization around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has idol immersion while solid waste dumping and encroachment activities are observed on a large scale.

**Section VII Notification Category**

The wetland is not under any conservation program.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

There are developmental activities that are taking place around the wetland that include setting up of new industries and encroachment. Moreover, the release of effluents and sewage has to be regulated and treated.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There are no serious issues observed as of now.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for the lake

Table 9.17: List of Plants recorded along the Odiyur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 3 | *Portulaca oleracea* | Indian Parseland | Paruppukeerai, Pulikkeerai | Portulacaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Cissus adnata* | Entire-Leaf Wild Grape | | Vitaceae | Native | |
| 8 | *Alysicarpus vaginalis* | Alysiclover | | Fabaceae | Native | NA |
| 9 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 10 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 11 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 12 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 13 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 14 | *Senna occidentalis* | Coffee senna | Nattamtakarai, Payaverai | Fabaceae | Native | NA |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 17 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 18 | *Sesuvium portulacastrum* | Sea pursland,Shore pursland | Vankaravacci | Aizoaceae | Native | NA |
| 19 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 20 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 21 | *Oldenlandia umbellata* | Chay Root, Indian madder, Choy root | Chayam, Chayaver, Emboorel, Imbura-ver | Rubiaceae | Native | |
| 22 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 23 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 24 | *Catharanthus roseus* | Periwinkle, Madagascar periwinkle, Rosy periwinkle, Vinca | | Apocynaceae | Introduced | NA |
| 25 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 26 | *Evolvulus alsinoides* | Dwarf morning glory,Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 27 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 28 | *Ipomoea pes-caprae* | Goat Foot Vine | Attukkal | Convolvulaceae | Native | NA |
| 29 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 30 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 31 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 32 | *Pedalium murex* | Large caltrops | Yanainerunji,Perunerunji | Pedaliaceae | Native | NA |
| 33 | *Avicennia marina* | Indian Mangrove,White Mangrove | Venkantal | Acanthaceae | Native | LC |
| 34 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 35 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 36 | *Clerodendrum inerme* | Glory Bower | Sangam, Anjali | Lamiaceae | Native | NA |
| 37 | *Boerhavia repens* | Erect Spiderling | | Nyctaginaceae | Invasive | NA |
| 38 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 39 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 40 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 41 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 42 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhandlli | Phyllanthaceae | Native | NA |
| 43 | *Phyllanthus virgatus* | Seed under leaf, Virgate leaf flower | | Phyllanthaceae | Native | NA |
| 44 | *Casuarina equisetifolia* | Whistling Pine, Casuarina, | Savukku | Casuarinaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Common Ironwood, Beefwood, Bull-oak | | | | |
| 45 | *Asparagus racemosus* | Satawari | Tannirvittan | Asparagaceae | Native | NA |
| 46 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 47 | *Cyperus dubius* | White Water Sedge | Velutthanirbasi | Cyperaceae | Native | LC |
| 48 | *Fimbristylis dichotoma* | | | Cyperaceae | Native | LC |
| 49 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.18a: List of Insects recorded along the Odiyur Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 9.18b: List of Butterflies recorded along the Odiyur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 5 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 8 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 9 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 10 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 11 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 14 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 15 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 16 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |

Table 9.18c: List of Odonates recorded along the Odiyur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 9.18d: List of Reptiles recorded along the Odiyur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 9.18e: List of Birds recorded along the Odiyur Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 4 | Greater Flaminngo | *Phoenicopterus roseus* | Phoenicopteridae | Least Concern |
| 5 | Eurasian Spoonbill | *Platalealeu corodia* | Threskiornithidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Grey Heron | *Ardeac inerea* | Ardeidae | Least Concern |
| 8 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 12 | Pallid Harrier | *Circus macrourus* | Accipitridae | Near Threatened |
| 13 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 14 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 15 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 16 | Bar-tailed Godwit | *Limosa lapponica* | Scolopacidae | Near Threatened |
| 17 | Eurasian Curlew | *Numenius arquata* | Scolopacidae | Near Threatened |
| 18 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 19 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 20 | Little Stint | *Calidris minuta* | Scolopacidae | Least Concern |
| 21 | Caspian Tern | *Hydroprogne caspia* | Laridae | Least Concern |
| 22 | Lesser Crested Tern | *Thalasseus bengalensis* | Laridae | Least Concern |
| 23 | Greater Crested Tern | *Thalasseus bergii* | Laridae | Least Concern |
| 24 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 25 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 26 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 27 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 28 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 29 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 30 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 31 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

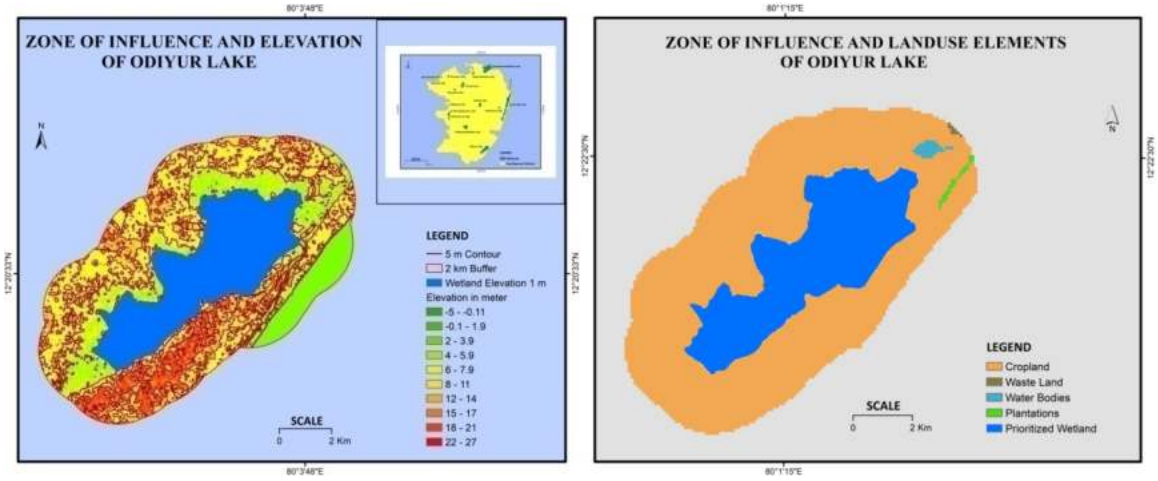
Table 9.18f: List of Mammals recorded along the Odiyur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.16: Comparative Google imagery for Odiyur Lake**




**Map 9.17: The zone of influence around the Odiyur Lake.**



**Parandur Lake**

Lake Survey number: 957 / 1A

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Parandur Lake (Plate 21)

1.2 Villages that surround the wetland include Parandur, Kottavakkam, Pattupattur, Madhuraparandur, Varadhapuram, Samanthipuram, Maniyachi, Nagapattu, Mettuparandur.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 56'13.6" N; 12° 56'24.5" N and Longitude: 079° 44'11.6" E; 079° 44'10.5" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 201 hectares (Map 9.18).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Tank.

2.3 Based on the secondary information the average depth is 3 meters for the wetland.

2.4 The elevation of the wetland is 79 to 82 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area. This is part of the Pallar river system.
b) The water in the wetland is mostly of intermittent nature.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater and the overflow goes to the river.
d) The pH of the water was observed to be alkaline and recorded up to 7.3.
e) The lake has fresh water with the salinity recorded at 0.174 ppt at the time of sampling.
f) The wetland was observed to be closer to Oligotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature varied between 26.5 and 30.9 °C and the humidity was 62%.

2.7 The area of zone of influence is 2746.42 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.19).

2.8 The major land use around the wetland comprised of
Agriculture80%, Settlements (rural) 10% and Industrial10%.

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 9.18& 9.19.

**Section III- Biodiversity**

3.1 List of Plant species: 44 species of plants were recorded around the wetland during our visit (Table 9.19).

3.2 List of animal species: 84 faunal species including 2 domestic species were recorded during the survey (List attached - Table 9.20a-h).

3.3 Species of Conservation importance: Common species of birds were observed during the survey (Table 9.20a-h).

3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although thereare introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is not undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge and overflow form the wetlands passes to the Pallar river.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although it is not for any the commercial purpose.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial fishing activity but only some recreational fishery is undertaken by local children and adults during their free time. Fishing is done once a year when the water in the lake recedes during the summer. The fish seeds are introduced by the fisherie department and there is always a conforntation by PWD and the Fisheries department.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland and not within the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition as per the information form the locals.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.
6.5 The wetland does not have any idol immersion but solid waste dumping and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Parandur Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

Mariappan N. and Richard L. (2006) Studies on freshwater prawns of family Atyidae and Palaemonidae form Kancheepuram and Thiruvallur districts, Tamilnadu, India, including one new species of the Genus *Caridina* H. Milne Edwards, 1837. Rec. Zool. Surv. India, Occ. Paper No. 243 : 1-80, (Published by the Director, Zool. Surv. India, Kolkata)

Nagalakshmi R. and Prasanna K. (2016)2015 Flood assessment in Kancheepuram district of Tamil Nadu using GIS Rasayan Journal of Chemistry Vol. 9 (No. 4): 798 - 805

PWD (2000) Groundwater perspectives: a profile of Kancheepuram District, Tamil Nadu. Public Works Department, Tamil Nadu, June, 220 pp

Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern India Hydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0


Table 9.19: List of Plant species recorded along the Parandur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 9 | *Senna auriculate* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 12 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 13 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 14 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 15 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 16 | *Emilia sonchifolia* | Purple Sow Thistle | Muyalchevi | Asteraceae | Native | NA |
| 17 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 18 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 19 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 20 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 21 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 22 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 23 | *Wrightia tinctoria* | Sweet indrajao, | Paalai | Apocynaceae | Native | LC |
| 24 | *Argyreia sericea* | Silky Morning Glory | Kanvalipoo | Convolvulaceae | Native | NA |
| 25 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 26 | *Sesamum indicum* | Sesame | Citrrel, Ellu, Tilam | Pedaliaceae | Native | NA |
| 27 | *Stachytarpheta jamaicensis* | Blue Porterweed | SeemaiNayuruvi | Verbenaceae | Native | NA |
| 28 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 29 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 31 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 32 | *Celosia argentea* | Plumed cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 33 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 34 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 35 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 36 | *Phyllanthus reticulatus* | Black-Honey Shrub | Kattukkilandlli | Phyllanthaceae | Native | NA |
| 37 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 38 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kottikizhangu | Aponogetonaceae | Native | LC |
| 39 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 40 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 41 | *Poa annua* | Annual Bluegrass | | Poaceae | Naturalized | LC |
| 42 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 43 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |
| 44 | *Tetrapogon roxburghiana* | Windmill grass | | Poaceae | Native | |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.20a: List of Insects recorded along the Parandur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 9.20b: List of Butterflies recorded along the Parandur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 11 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 12 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 13 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 14 | Common Crow | *Euploea core* | Danainae | Common |
| 15 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 16 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 17 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 18 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.20c: List of Odonata recorded along the Parandur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 9.20d: List of Arachnida recorded along the Parandur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Wolf Spider | *Lycosidae sp.* | Lycosidae |

Table 9.20e: List of fishes recorded form the Parandur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyng odonidella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 5 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 12 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |
| 13 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 14 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 15 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |
| 16 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 17 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 18 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 19 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |
| 20 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.20f: List of Reptiles recorded along the Parandur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake | *Xenochrophis sp.* | Colubridae | - |

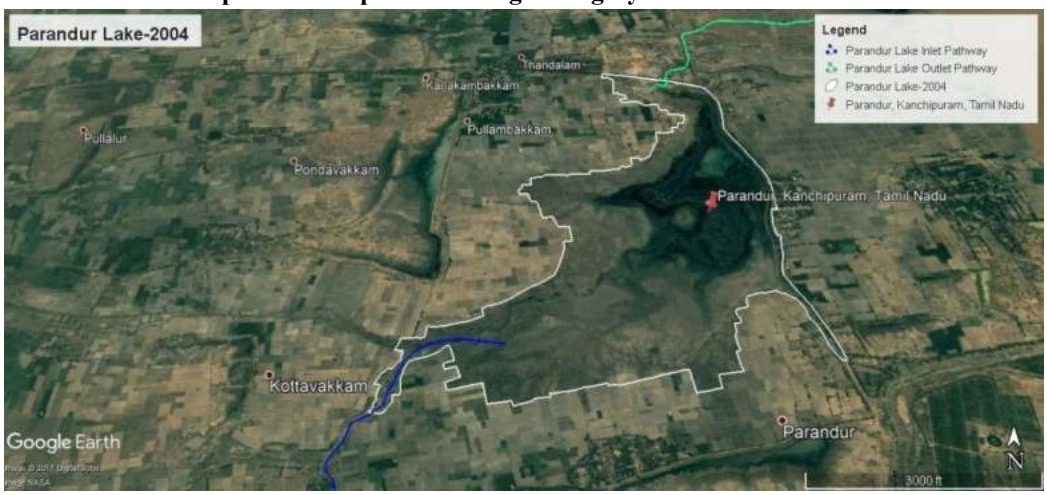
Table 9.20g: List of Birds recorded along the Parandur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 10 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 11 | Green Sandpiper | *Tringao chropus* | Scolopacidae | Least Concern |
| 12 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 13 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 14 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 15 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 16 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 17 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 18 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 19 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 20 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 21 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 22 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 23 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 24 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 25 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 26 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

Table 9.20h: List of Mammals recorded along the Parandur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

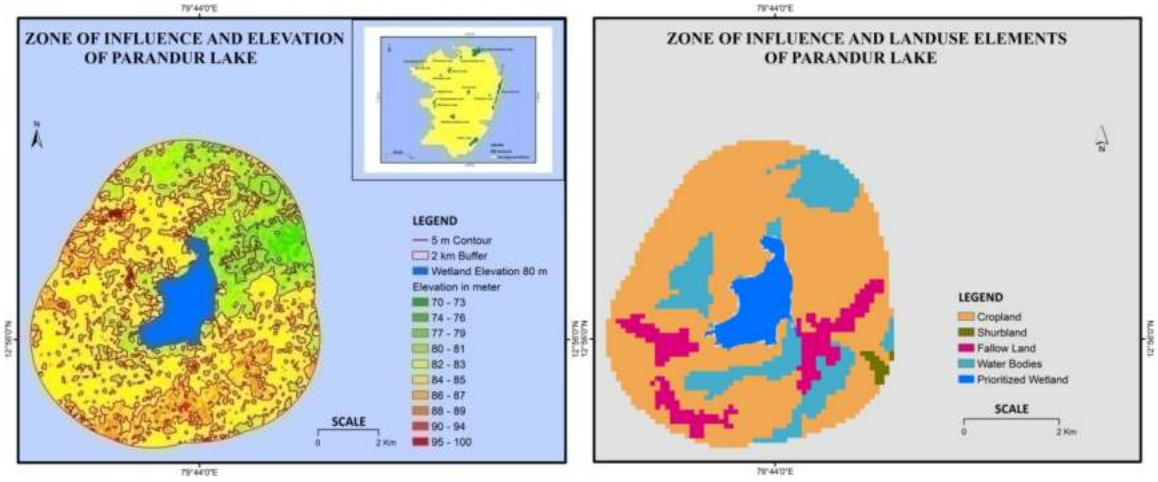
**Map 9.18: Comparative Google imagery for Parandur Lake**







**Map 9.19: The zone of influence around the Parandur Lake.**



**Sirudavoor Lake**

**Lake Survey Number**: Not Provided.

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as Sirudavoor lake (Plate 21).

1.2 Villages that surround the wetland include Aamoor, Sirudavoor.

1.3 & 1.4 The wetland is based in Tiruporur taluka in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 40'59.7" N; 12° 40'55.9" N; 12° 41'02.4" N; 12° 41'06.1" N; and Longitude: 080° 09'18.7" E; 080° 09'12.3" E; 080° 09'09.1" E; 080° 09'01.2" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of Govt of India with the undertaking by PWD of Kancheepuram district.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 203 hectares (Map 9.20).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lake.

2.3 Based on the secondary information the average depth is 2 to 2.5 meters for the wetland.

2.4 The elevation of the wetland is 7 to 14 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and connection Chembakkam and Kolameri.
b) The water in the wetland is mostly of permanent nature.
c) The water from the wetlands forms a main source for the agriculture and fishing activity. The water also helps in replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded up to 8.54.
e) The lake has fresh water with the salinity recorded at 0.236 ppt.
f) Tourist come for bird watching.

2.6 Climatic setting

a) Rainfallfor the month of August in Kancheepuram was 68.2 mm.
b) The atmospheric temperature was 30.6 °C and the humidity was 50 %

2.7 The area of zone of influence- 2433.36 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.21).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Agriculture 85%, | Grasslands/shrubland 0%, |
| Urban Settlements 0%, | Rural Settlements 15%, |
| Industrial 0%, | Forests 0% |

2.9. The comparison of the wetland for the years 2005 and 2018 is given in Map 9.20 & 9.21.

**Section III- Biodiversity**

3.1 List of Plant species:29 species of plants were recorded around the wetland during our visit (Table 9.21).

3.2 List of animal species: 49 faunal species excluding 4 domestic species were recorded during the survey (Table 9.22a-g)

3.3 Species of Conservation importance: Migratory and Common species of birds were observed during the survey with no threatened category bird recorded during our survey (Table 9.22a-g)

3.4 Major Plant invasive alien species and extent of invasion:Eight invasive plants including *Prosopis juliflora*, *Ipomoea sp,* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: The wetland is in a very polluted status with very minimal fishery and mostly comprises of carps.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around the wetland.
4.3 Fishing is undertaken in the wetland as a community right.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is a site for recreation and is frequented by nature enthusiast for bird watching as it is also a bird sanctuary.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do visit the wetland.
4.12 There are no agriculture or plantation activities within the wetland
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a fishery naturally form the Bay of Bengal.
4.15 There is illegal mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity and some recreational fishery is undertaken.
5.2 The water is not ustilised for drinking.
5.3 Agriculture is undertaken around the wetland and not within the wetland.
5.4 Grazing by the cattle was observed.
5.5 The water is used for domestic purposes.
5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.
5.7 Religious and cultural functions are performed along the banks of the wetland.

**Section VI Present and potential threats**

6.1 The wetland shows a major change in the pattern of water inflow and outflow.
6.2 There are invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not under any conservation program.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

Illegal mining of sand should be checked.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There are no serious issues observed as of now.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published literature available for Sirudavoor lake

Table 9.21: List of Plants recorded along the Sirudavoor Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattukasturi | Malvaceae | Native | NA |
| 2 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 3 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 4 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 5 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 6 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 7 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 8 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 9 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 10 | *Citrullus colocynthis* | Bitter Apple, Colocynth, | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 11 | *Oldenlandiaum bellata* | Chay Root, Indian madder, | Chayam, Imbura-ver | Rubiaceae | Native | |
| 12 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 13 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 14 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 15 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 16 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 17 | *Pedalium murex* | Large caltrops | Yanainerunji,Perunerunji | Pedaliaceae | Native | NA |
| 18 | *Bonnayaciliata subsp. ciliata* | Fringed linternia | | Linderniaceae | Native | LC |
| 19 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 20 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 21 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 22 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 23 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 24 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 25 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 26 | *Cyperus rotundus* | Common nut sedge, | Korai, muthakasu | Cyperaceae | Native | LC |
| 27 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 28 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 29 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.22a: List of Insects recorded along the Sirudavoor Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Giant Honey Bee | *Apis dorsata* | Apidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 9.22b: List of Butterflies recorded along the Sirudavoor Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 8 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 9 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 10 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |
| 11 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 12 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.22c: List of Odonates recorded along the Sirudavoor Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 9.22d: List of Fishes recorded form the Sirudavoor Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 4 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 5 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.22e: List of Reptiles recorded along the Sirudavoor Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

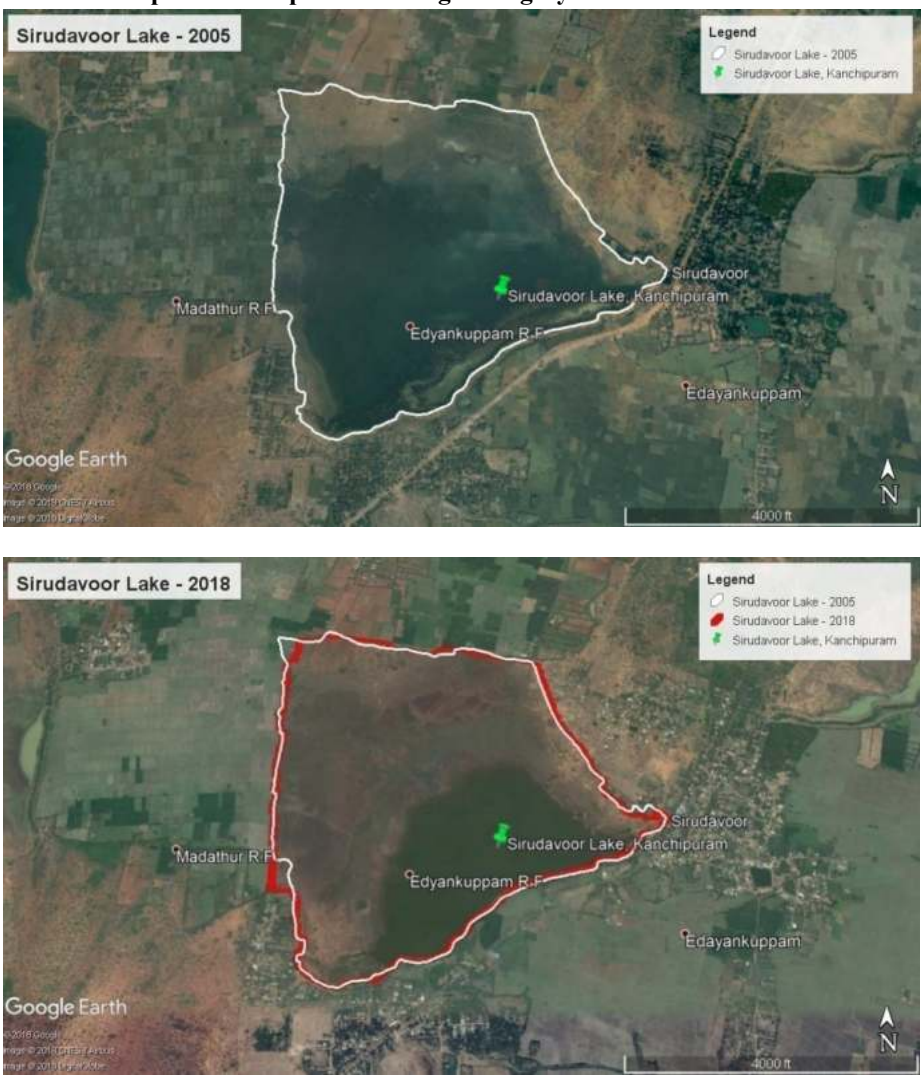
Table 9.22f: List of Birds recorded along the Sirudavoor Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 3 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 4 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 5 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 6 | Caspian Tern | *Hydroprogne caspia* | Laridae | Least Concern |
| 7 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 8 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 9 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 10 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 11 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 12 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 13 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 14 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

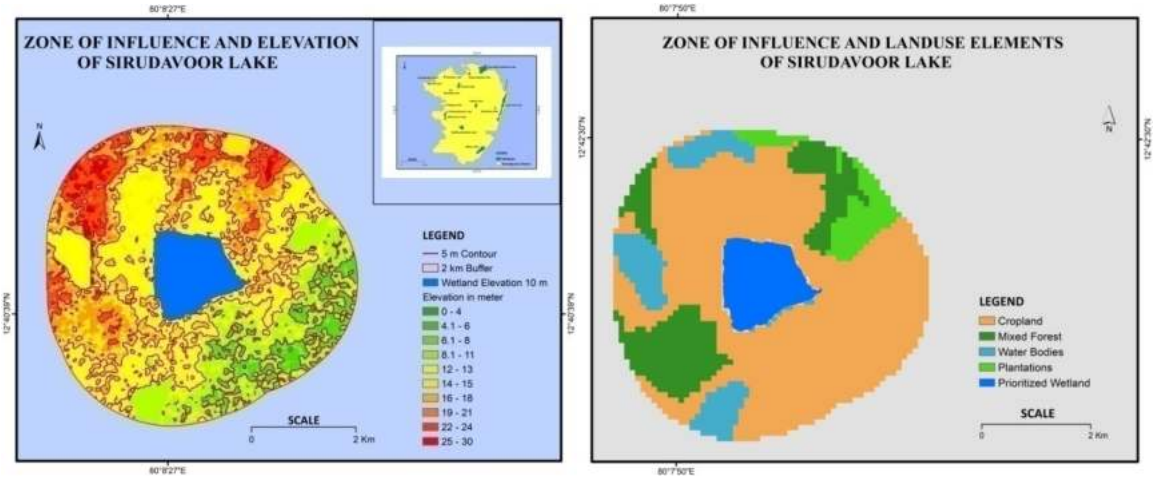
Table 9.22g: List of Mammals recorded along the Sirudavoor Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.20: Comparative Google imagery for Sirudavoor Lake**




**Map 9.21: The zone of influence around the Sirudavoor Lake.**



**SriperumpudurLake**

**Sriperumbudur** is a town panchayat in Tamil Nadu located 40 kilometers southwest of the city of Chennai on the National Highway 4.

**Lake Survey Number**: 1256 / 1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Sriperumpudur Lake (Plate22).

1.2 Villages that surround the wetland include Sriperumpudur, Ramapuram, Bakthavachalamnagar, S.P. Chattram, Kadupattu.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 58'41.8" N; 12° 58'14.2" N and Longitude: 079° 56'14.4" E; 079° 56'25.8" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 314 hectares (Map 9.22).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Seasonal intermittent lakes.

2.3 Based on the secondary information the average depth is 4 meters for the wetland.

2.4 The elevation of the wetland is 50 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of intermittent nature.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater and the overflow goes to the river.
d) The pH of the water was observed to be alkaline and recorded up to 7.5
e) The lake has fresh water with the salinity recorded at 0.138 ppt at the time of sampling.
f) The wetland was observed to be Mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature was 27.5 °C and the humidity was 52%

2.7 The area of zone of influence is 3244.89 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.23).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forests 15%, | Agriculture 25%, |
| Settlements (rural) 15%, | Settlements (Urban) 20% |
| Grasslands 0% | Industrial 25%. |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 9.22& 9.23.

**Section III- Biodiversity**

3.1 List of Plant species: 42 species of plants were recorded around the wetland during our visit (Table 9.23).

3.2 List of animal species: 61 faunal species including 2 domestic species were recorded during the survey (Table 9.24a-h).

3.3 Species of Conservation importance: Common species of birds were observed during the survey with none of the threatened category birds recorded during our survey (Table 9.24a-f).

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Ipomoea sp* and *Microcystis sp.* formed nearly 80 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking waterform the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland and almost 25% of the lake water is used for irrigation.

4.3 Fishing is not undertaken in the wetland.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge and overflow form the wetlands passes to the Pallar river.

4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The bird enthusiast do not visit the wetland despite the diversity.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.

4.14 The wetland supports a fishery although it is not for any the commercial purpose.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is little commercial fishing activity and some recreational fishery is undertaken.

5.2 Major portion of the water is utilized for irrigation.

5.3 Agriculture is undertaken around the wetland and not within the wetland.

5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.

5.5 The water is not used for domestic purposes washing, bathing.

5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

5.7 Religious and cultural functions are performed along the banks of the wetland.

**Section VI Present and potential threats**

6.1 The wetland shows a major change in the pattern of water inflow and outflow due to the industrial and domestic effluents.

6.2 There is high level of pollution in the form of sewage, effluents and solidwaste dumping is seen.

6.3 There is increase in agricultural activities around the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland has idol immersion while solid waste dumping and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

There are developmental activities that are taking place around the wetland that include setting up of new industries, encroachment and agriculture. Moreover the release of effluents and sewage has to be regulated and treated before it can spoil the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing. There is increase in the release of effluents and sewage into the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Sriperumpudur Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

Mariappan N. and Richard L. (2006) Studies on freshwater prawns of family Atyidae and Palaemonidae form Kancheepuram and Thiruvallur districts, Tamilnadu, India, including one new species of the Genus *Caridina* H. Milne Edwards, 1837. Rec. Zool. Surv. India, Occ. Paper No. 243 : 1-80, (Published by the Director, Zool. Surv. India, Kolkata)

Nagalakshmi R. and Prasanna K. (2016)2015 Flood assessment in Kancheepuram district of Tamil Nadu using GIS Rasayan Journal of Chemistry Vol. 9 (No. 4): 798 - 805

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Senthilkumar M. Gnanasundar D. Sampath Kumar E. (2018) Deciphering Freshwater/Saline Water Interface in and Around Northern Chennai Region, Southern India. In: Saha D., Marwaha S., Mukherjee A. (eds) Clean and Sustainable Groundwater in India. Springer Hydrogeology. Springer, Singapore


Table 9.23: List of Plant species recorded along the Sriperumpudur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Ceiba pentandra* | Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Peltophorum pterocarpum* | Copperpod, Rusty shield bearer, Peelagulmohar | konraivagai | Fabaceae | Introduced | NA |
| 10 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 11 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 14 | *Carica papaya* | Papaya Tree | Papalimaram | Caricaceae | Native | DD |
| 15 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 16 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 17 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 18 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 19 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 21 | *Hemidesmus indicus* | Indian Sarsaparilla | Nannari, Sugandipala | Apocynaceae | Native | NA |
| 22 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 23 | *Pergularia daemia* | Pergularia | Uttamani | Apocynaceae | Native | NA |
| 24 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai | Ehretiaceae | Native | NA |
| 25 | *Ipomoea campanulata* | Tambar vel | | Convolvulaceae | Invasive | NA |
| 26 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 27 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 28 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 29 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 30 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 31 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 32 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 33 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 34 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, | Euphorbiaceae | Native | NA |
| 35 | *Chrozophorarottleri* | Rottler'sChrozophora | Purapirakkai | Euphorbiaceae | Native | NA |
| 36 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 37 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 38 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, | Commelinaceae | Native | LC |
| 39 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 40 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 41 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 42 | *Eleusine indica* | Indian crowfoot grass,Indian goose grass, | Thipparagi, Keveru | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.24a: List of Insects recorded along the Sriperumbudur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 9.24b: List of Butterflies recorded along the Sriperumbudur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 7 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 8 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 9 | Common Crow | *Euploea core* | Danainae | Common |
| 10 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 11 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 12 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 9.24c: List of Odonata recorded along the Sriperumbudur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 9.24d: List of Arachnida recorded along the Sriperumbudur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 9.24e: List of Fish recorded form the Sriperumbudur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 4 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 5 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 6 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 7 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |
| 8 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayiraimeen | Cobitidae | LC |
| 9 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 10 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 11 | *Notopterus notopterus* | Featherback | Chottavaalaimeen | Notopteridae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.24f: List of Reptiles recorded along the Sriperumbudur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake | *Xenochrophis sp.* | Colubridae | - |

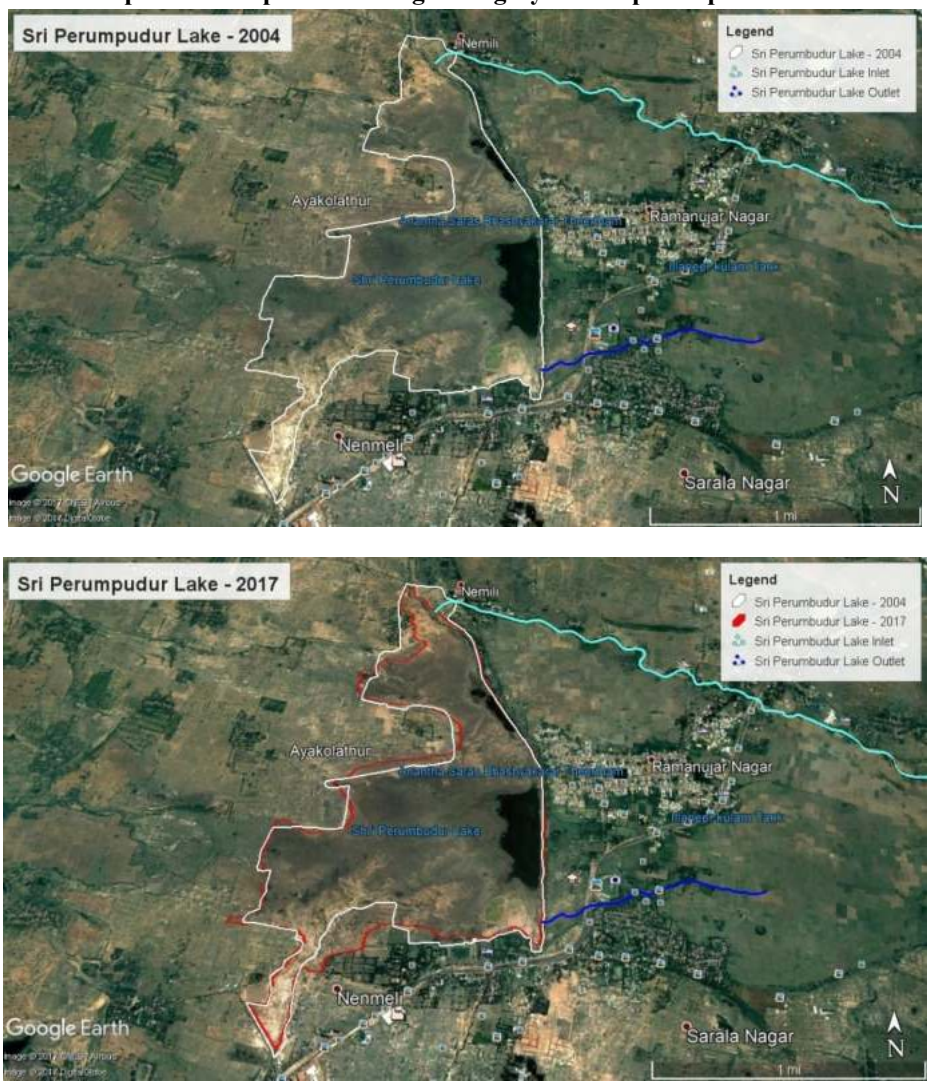
Table 9.24g: List of Birds recorded along the Sriperumbudur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 3 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 4 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 5 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 6 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 7 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 8 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 9 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 10 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 11 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 12 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 13 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 14 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 15 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 16 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 17 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 18 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 19 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

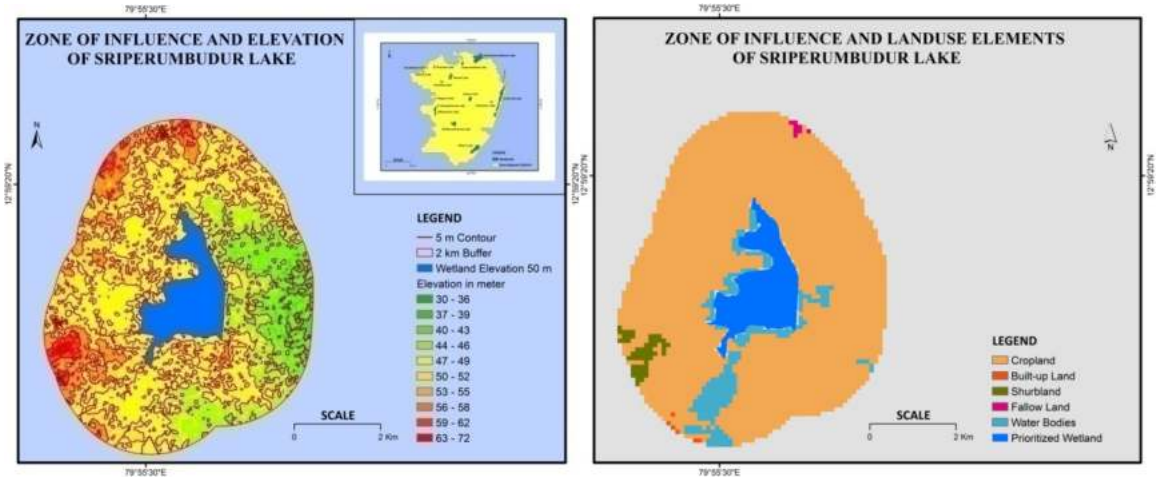
Table 9.24h: List of Mammals recorded along the Sriperumbudur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.22: Comparative Google imagery for Sriperumpudur Lake**




**Map 9.23: The zone of influence around the Sriperumpudur Lake.**



**Thenneri Lake**

**Lake survey Number**: 290 and 235

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Thenneri Lake (Plate 22)

1.2 Villages that surround the wetland include Thenneri, Mettukclani, Sirupagal, Cinnivakkam, Papanguli, Alapakkam, Summarikuppam, Aiyemcheri, Kunnam.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 51'03.6" N; 12° 51'20.6" N; 12° 55'49.9" N and Longitude: 079° 51'05.5" E; 079° 51'07.7" E; 079° 44'15.3" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 807 hectares (Map 9.24).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Tank.

2.3 Based on the secondary information the average depth is 4.5 meters for the wetland.

2.4 The elevation of the wetland is 66 to 74 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of permanent nature.
c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in the replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded up to 7.5.
e) The lake has fresh water with the salinity recorded at 0.138 ppt at the time of sampling.
f) The wetland was observed to be Oligotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
b) The atmospheric temperature varied between 27.9 and 29.7 °C and the humidity was 55%

2.7 The area of zone of influence is 4363.98 hectares with a fixed buffer area of 2 kms around the wetland (Map9.25).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Agriculture 60%, | Settlements (rural) 30%, |
| Settlements (Urban) 0%, | Industrial 10%, |
| Grassland 0%, | Forest 0%. |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 9.24& 9.25.

**Section III- Biodiversity**

3.1 List of Plant species: 50 species of plants were recorded around the wetland during our visit (Table 9.25).

3.2 List of animal species: 72 faunal species including 2 domestic species were recorded during the survey (Table 9.26a-h)

3.3 Species of Conservation importance: Two Threatened species fish and common species of birds were observed during the survey (Table 9.26a-h)

3.4 Major plant invasive alien species and extent of invasion: Eight invasive plants including *Microsystis* sp. *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is not undertaken.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge and overflow form the wetlands passes to the Marutham village.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although it is not for any the commercial purpose.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial fishing activity and some recreational fishery is undertaken without any lease form government or community.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland and not within the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.
6.5 The wetland does not have any idol immersion but solid waste dumping and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages. An industry dealing with plastics and sponge has started near the wetland that needs to be regulated.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing. Harvesting of fish is also undertaken.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Thenneri Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

Mariappan N. and Richard L. (2006) Studies on freshwater prawns of family Atyidae and Palaemonidae form Kancheepuram and Thiruvallur districts, Tamilnadu, India, including one new species of the Genus Caridina H. Milne Edwards, 1837. Rec. Zool. Surv. India, Occ. Paper No. 243 : 1-80, (Published by the Director, Zool. Surv. India, Kolkata)

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Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern IndiaHydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0

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Table 9.25: List of Plant species recorded along the Thenneri Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Nymphaea nouchali var. pubescens* | Pink water lily,Pink lotus | Vellambal | Nymphaeaceae | Native | LC |
| 3 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 4 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 5 | *Corchorus aestuans* | East Indian Mallow, Jute | | Malvaceae | Native | |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Canavalia cathartica* | Wild Sword Bean | Segapputampattai, Valavaraik-kay | Fabaceae | Native | NA |
| 10 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 11 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 12 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 13 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 14 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 15 | *Tephrosia villosa* | Hoary Tephrosia | | Fabaceae | Native | NA |
| 16 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 17 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 18 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 19 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 20 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 21 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 22 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 23 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 24 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 25 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 26 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 27 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 28 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 29 | *Argyreia sericea* | Silky Morning Glory | Kanvalipoo | Convolvulaceae | Native | NA |
| 30 | *Ipomoea pes-caprae* | Goat Foot Vine | Attukkal | Convolvulaceae | Native | NA |
| 31 | *Solanum mauritianum* | Tree Tobacco, Woolly Nightshade, Ear-leaved Nightshade, Flannel Weed, Bugweed, Kerosene Plant | | Solanaceae | Naturalized | |
| 32 | *Andrographis echioides* | False waterwillow | Gopuram tangi | Acanthaceae | Native | NA |
| 33 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 34 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 35 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 36 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 37 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 38 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 39 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, | Euphorbiaceae | Native | NA |
| 40 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 41 | *Euphorbia umbellata* | African milk bush | | Euphorbiaceae | Native | NA |
| 42 | *Jatropha tanjorensis* | Tanjore jatropha | | Euphorbiaceae | Native | NA |
| 43 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 44 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 45 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kottikizhangu | Aponogetonaceae | Native | LC |
| 46 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 47 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 48 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 49 | *Eragrostis gangetica* | SlimflowerLovegrass | | Poaceae | Native | NA |
| 50 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.26a: List of Insects recorded along the Thenneri Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 9.26b: List of Butterflies recorded along the Thenneri Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 8 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 9 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Common Crow | *Euploea core* | Danainae | Common |
| 12 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 13 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 14 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 15 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.26c: List of Odonata recorded along the Thenneri Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 9.26d: List of Arachnida recorded along the Thenneri Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 9.26e: List of Fishes recorded form the Thenneri Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 5 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayiraimeen | Cobitidae | LC |
| 12 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 13 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 14 | *Stolephorus commersonii* | Commerson's anchovy | Nethili | Engraulidae | NE |
| 15 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 16 | *Notopterus notopterus* | Featherback | Chottavaalaimeen | Notopteridae | LC |
| 17 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |
| 18 | *Sphyraena barracuda* | Great barracuda | Seelameen | Sphyraenidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.26f: List of Reptiles recorded along the Thenneri Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

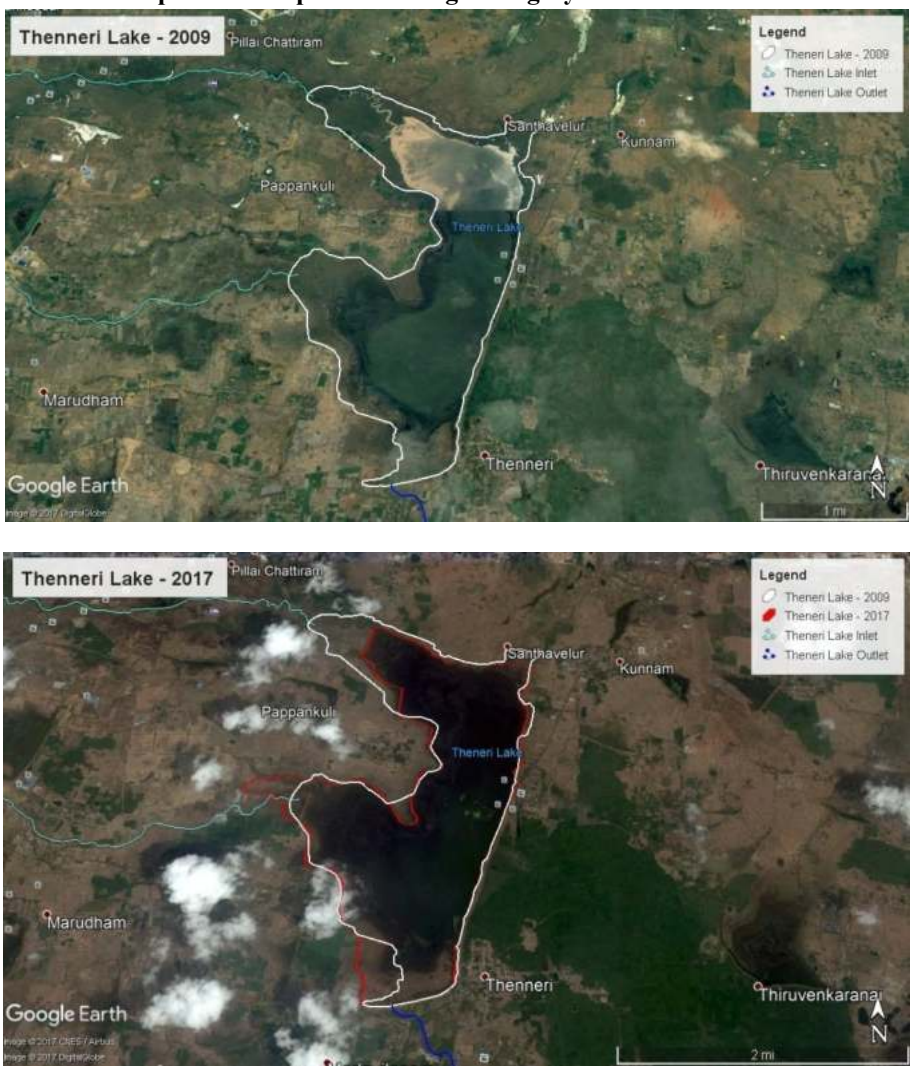
Table 9.26g: List of Birds recorded along the Thenneri Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 3 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 4 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 5 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 6 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 7 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 8 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 9 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 10 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 11 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 14 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 15 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 16 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 17 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 18 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

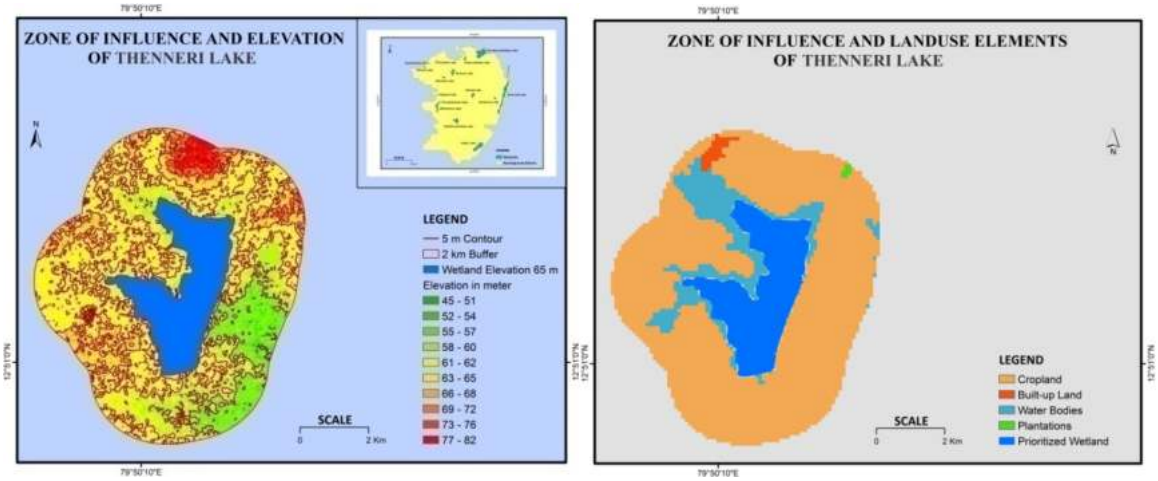
Table 9.26h: List of Mammals recorded along the Thenneri Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 3 | Indian grey Mongoose | *Herpestes edwardsi* | Herpestidae | Least Concern |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.24: Comparative Google imagery for Thenneri Lake**




**Map 9.25: The zone of influence around the Thenneri lake.**



**Thirupulivanam Lake**

Thirupulivanam town has an ancient almost 1000 year old Vyakrapureeswarar temple. Built by Pallava King Nandivarman. The Pallavas also constructed a tank with an area of 120 hectares adjacent to the temple.

**Lake Survey Number**: 339

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Thirupulivanam Lake (Plate 23).
1.2 Villages that surround the wetland include Thirupulivanam, Murugaeri, Andithongal andAlapulam.
1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 12° 39'48.1" N; 12° 39'45.5" N; 12° 39'29.6" N; 12° 39'20.6" N and Longitude: 079° 45'29.6" E; 079° 45'36.4" E; 079° 45'33.3" E; 079° 45'30.6" E
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 116 hectares (Map 9.26).
2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Tank. The locals are unaware of the origins of the lake but literature mentions the wetland as man-made tank.
2.3 Based on the secondary information the average depth is 3.5 meters for the wetland.
2.4 The elevation of the wetland is 67 to 71 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and direct inflow form the river Cheyyar.
   b) The water in the wetland is mostly of intermittent nature.
   c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater.
   d) The pH of the water was observed to be alkaline and recorded up to 8.0.
   e) The lake has fresh water with the salinity recorded at 0.174 ppt at the time of sampling.
   f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages as well as small quantity of industrial effluents form the adjoining warehouses.
2.6 Climatic setting
   a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
   b) The atmospheric temperature varied between 24.3 and 25.8 °C and the humidity was 76%
2.7 The area of zone of influence is 2228.38 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.27)
2.8 The major land use around the wetland comprised of
   Agriculture 50%, Settlements (rural) 25%,
   Grass Land / Shrubland 10%, Barren Land 15%.
2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 9.26& 9.27.

**Section III- Biodiversity**

3.1 List of Plant species:64 species of plants were recorded around the wetland during our visit (Table 9.27).
3.2 List of animal species:118 faunal species excluding 4 domestic species were recorded during the survey (List attached - Table 9.28a-i).
3.3 Species of Conservation importance: Two near Threatened species of birds and three fish species were observed during the survey (Table 9.28 a-i).

3.4 Major Plant invasive alien species and extent of invasion: 13 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.

4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is done by very few families which is a community right but there is no society. The fish seed is introduced by the Tamil Nadu Fisheries department and mostly comprises of the common carps.

4.4 The wetland is not used for any aquatic food cultivation

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge and overflow form the wetlands passes to the Marutham village.

4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The bird enthusiast do not visit the wetland despite the diversity.

4.12 There are no agriculture or plantation activities within the wetland

4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.

4.14 The wetland supports a fishery although it is not for any the commercial purpose.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial fishing activity but only some recreational fishery is undertaken by local children and adults during their free time. The impact on the ecological health is not assessed.

5.2 Major portion of the water is utilized for irrigation

5.3 Agriculture is undertaken around the wetland and not within the wetland.

5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.

5.5 The water is not used for any domestic purposes.

5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.

6.3 There is increase in agricultural activities around the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.

6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some developmental activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Thirupulivanam Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. Pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

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Rajmohan N. and Elango L. (2005) Distribution of Iron, Mangandse, Zinc and Atrazine in Groundwater in Parts of Palar and Cheyyar River Basins, South India Environ Monit Assess 107: 115. https://doi.org/10.1007/s10661-005-5307-0

Rajmohan N. and Elango L. (2005) Nutrient chemistry of groundwater in an intensively irrigated region of southern India. Environ Geol 47: 820. https://doi.org/10.1007/s00254-004-1212-z

Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern IndiaHydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0


Table 9.27: List of Plant species recorded along the Thirupulivanam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 3 | *Abelmoschus angulosus* | --- | KattuSemparuthi | Malvaceae | Native | NA |
| 4 | *Ceiba pentandra* | Kapok, Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 5 | *Corchorus aestuans* | East Indian Mallow, Jute, | | Malvaceae | Native | |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida rhombifolia* | Cuban jute, Jelly leaf, | Kurundotti | Malvaceae | Native | |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 11 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 12 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 13 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 14 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 15 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 16 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 17 | *Carica papaya* | Papaya Tree | Papalimaram | Caricaceae | Native | DD |
| 18 | *Cucumis maderaspatanus* | Madras pea pumpkin | Nagilangiai | Cucurbitaceae | Exotic | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 20 | *Opuntia stricta* | Erect Prickly Pear | Sappathikalli | Cactaceae | Invasive | LC |
| 21 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 22 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 23 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 24 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, | Asteraceae | Native | NA |
| 25 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, | Plumbaginaceae | Native | NA |
| 26 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 27 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 28 | *Argyreia sericea* | Silky Morning Glory | Kanvalipoo | Convolvulaceae | Native | NA |
| 29 | *Ipomoea campanulata* | Tambar vel | | Convolvulaceae | Invasive | NA |
| 30 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 31 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 32 | *Physalis angulata* | Cutleaf Ground Cherry | | Solanaceae | Native | LC |
| 33 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 34 | *Pedalium murex* | Large caltrops | Yanainerunji, | Pedaliaceae | Native | NA |
| 35 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, | Martyniaceae | Native | NA |
| 36 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 37 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 38 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 39 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 40 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 41 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 42 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 43 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam | Amaranthaceae | Native | NA |
| 44 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 45 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 46 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 47 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 48 | *Celosia argentea* | Plumed cockscomb | makilikkeerai | Amaranthaceae | Native | NA |
| 49 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 50 | *Acalypha indica* | Indian Copperleaf | Kollipundu | Euphorbiaceae | Native | NA |
| 51 | *Euphorbia antiquorum* | Triangular Spurge | Chaturakalli, | Euphorbiaceae | Native | |
| 52 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 53 | *Euphorbia tirucalli* | Pencil Tree, Firestick Plants, | Cakkalavi, | Euphorbiaceae | Naturalized | LC |
| 54 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 55 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 56 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 57 | *Commelina benghalensis* | Bengal Dayflower | Adutinnathalai | Commelinaceae | Native | LC |
| 58 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, | Arecaceae | Native | NA |
| 59 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 60 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 61 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 62 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 63 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 64 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.28a: List of Insects recorded along the Thirupulivanam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 6 | Assassin Bug | *Reduviidae sp.* | Reduviidae |
| 7 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 8 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 9 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 10 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 11 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 12 | Ant species | *Camponotus sp.* | Formicidae |

Table 9.28b: List of Diplopoda recorded along the Thirupulivanam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |
| 2 | Millipede | *Spinotarsus colosseus* | Odonotopgidae |

Table 9.28c: List of Butterflies recorded along the Thirupulivanam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 11 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 12 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 13 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 14 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 15 | Common Pierrot | *Castalius rosimon* | Polyommatinae | Common |
| 16 | Indian Cupid | *Everes lacturnus* | Polyommatinae | Common |
| 17 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 18 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 19 | Common Crow | *Euploea core* | Danainae | Common |
| 20 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 21 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 22 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 23 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 9.28d: List of Odonata recorded along the Thirupulivanam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 9.28e: List of Arachnida recorded along the Thirupulivanam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 9.28f: List of Fish recorded form the Thirupulivanam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 12 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 13 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 14 | *Stolephorus commersonii* | Commerson's anchovy | Nethili | Engraulidae | NE |
| 15 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 16 | *Notopterus notopterus* | Featherback | Chottavaalaimeen | Notopteridae | LC |
| 17 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |
| 18 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.28g: List of Reptiles recorded along the Thirupulivanam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

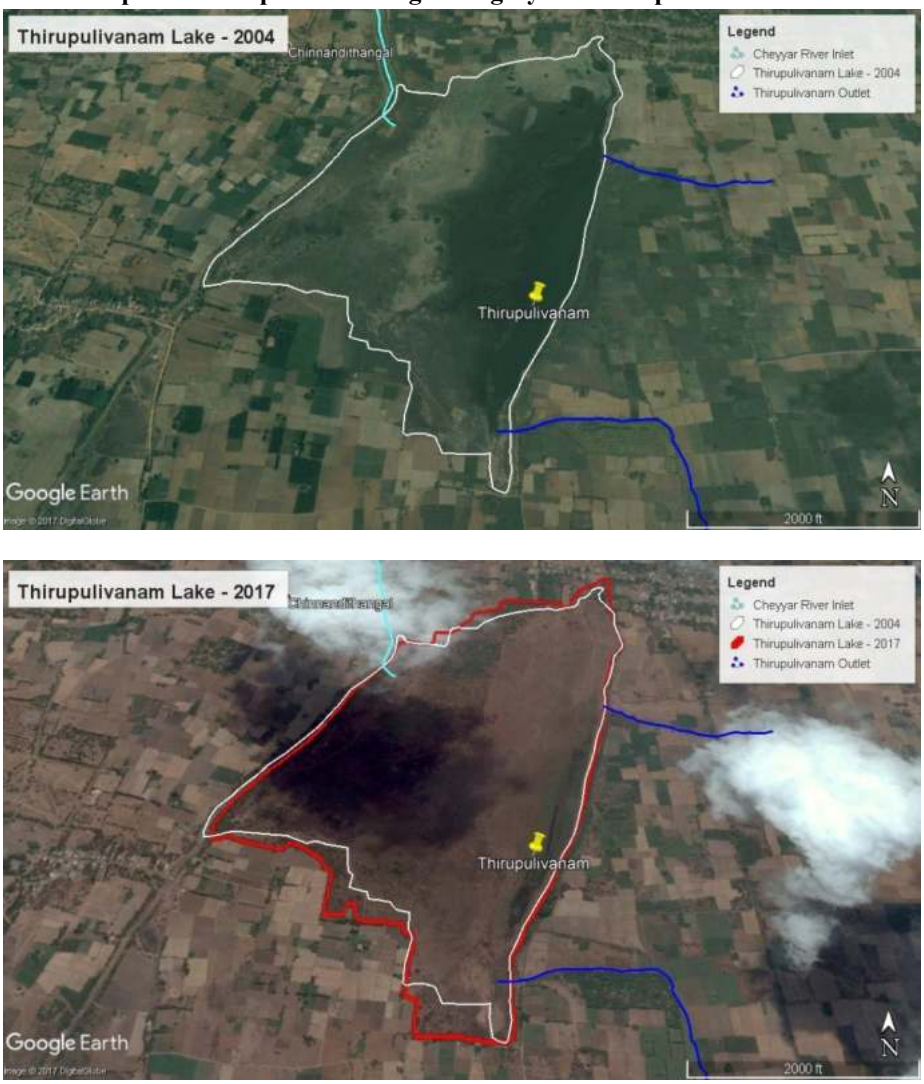
Table 9.28h: List of Birds recorded along the Thirupulivanam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 6 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 7 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 8 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 9 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 10 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 11 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 12 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 13 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 14 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 15 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 16 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 17 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 18 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 19 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 20 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 21 | Common Woodshrike | *Tephrodornis pondicerianus* | Tephrodornithidae | Least Concern |
| 22 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 23 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 24 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 25 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 26 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 27 | White-browed Bulbul | *Pycnonotus luteolus* | Pycnonotidae | Least Concern |
| 28 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 29 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 30 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 31 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 32 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 33 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 34 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 35 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 36 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 37 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

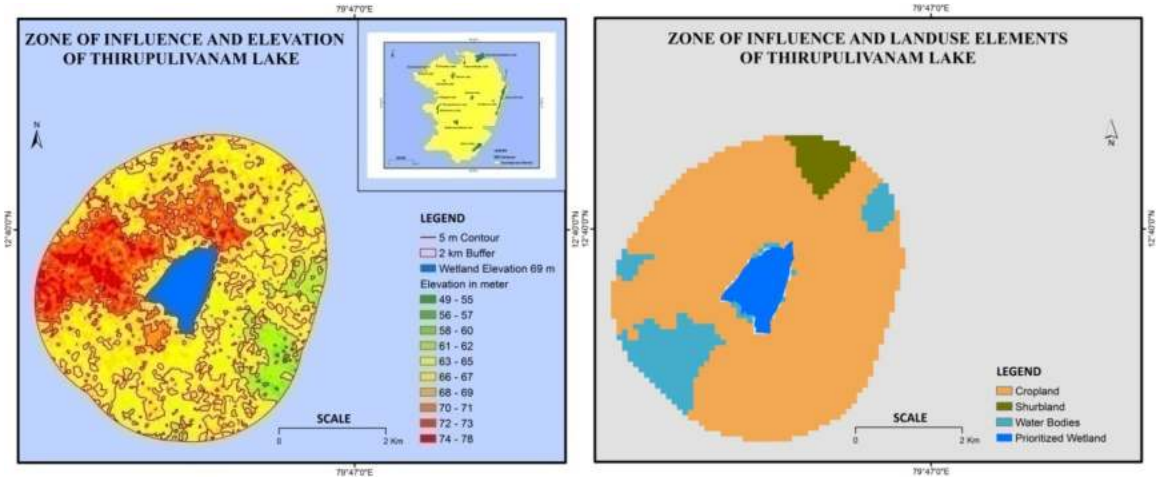
Table 9.28i: List of Mammals recorded along the Thirupulivanam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.26: Comparative Google imagery for Thirupulivanam Lake**




**Map 9.27: The zone of influence around the ThirupulivanamLake.**



**Uthiramerur Lake**

UthiramerurLake near Vedapalayam is in Uttiramerur town in Kancheepuram District. The man-made wetland was constructed during the Pallava regime.

**Lake Survey number**: 630 / 1 - 244, 633 / 1 - 519

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Uthiramerur Lake also known as Vedapalayam Lake (Plate 23)

1.2 Villages that surround the wetland include Uthiramerur, VedapalayamKattampakkam, Neeradi, Pucheri, Kuppanthur, Manithottam, Angur, Vadavur, Nallur, S.P.Chatam, Purnthikollam, Pattakulam, Vallamkorramai andThakkanallur.

1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 37'56.1" N; 12° 38'12.4" N; 12° 38'21.2" N; 12° 37'32.1" N and Longitude: 079° 44'27.8" E; 079° 44'32.5" E; 079° 44'33.3" E; 079° 43'22.7" E.

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 788 hectares (Map 9.28).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Tank.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 29 to 36 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.

b) The water in the wetland is mostly of intermittent nature as the wetland is mostly dependant on the rainfall and runoff waters.

c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater. The over flow also feeds into the Pallar river.

d) The pH of the water was observed to be alkaline and recorded up to 8.5.

e) The lake has fresh water with the salinity recorded at 0.174 ppt at the time of sampling.

f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages as well as small quantity of industrial effluents form the adjoining warehouses.

2.6 Climatic setting

a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.

b) The atmospheric temperature varied between 29.1 and 29.5 °C and the humidity was 58%.

2.7 The area of zone of influence is 5039.78 hectares with a fixed buffer area of 2 kms around the wetland (Map 9.29).

2.8 The major land use around the wetland comprised of

Agriculture 70%, Settlements (rural) 28%,

Industrial 2%, Grasslands 0%.

2.9. The comparison of the wetland for the years 2006 and 2017 is given in Map 9.28& 9.29.

**Section III- Biodiversity**

3.1 List of Plant species:52 species of plants were recorded around the wetland during our visit (Table 9.29).

3.2 List of animal species:109 animal species excluding 3 domestic species were recorded during the survey (List attached - Table 9.30a-i).

3.3 Species of Conservation importance: Two near Threatened species of birds and fish were observed during the survey (Table 9.30a-i).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.

4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is done by very few families which is a community right. The fish seed is introduced by the Tamil Nadu Fisheries department and mostly comprises of the common carps.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching. The locals only frequent it feed the fish as an entertainment.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge and overflow form the wetland also contributes to the Pallar river.

4.9 There is significant runoff form the surrounding catchment area and due to deforestation the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is only majorly used by bird enthusiast.

4.12 There are no agriculture or plantation activities within the wetland but it is a wetland where fishing is the major livelihood.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a fishery although it is not for any the commercial purpose.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial fishing activity but only some recreational fishery is undertaken by local children and adults during their free time.

5.2 Major portion of the water is utilized for irrigation.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle was observed.

5.5 The water is not used for any domestic purposes.

5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.

6.3 There is increase in agricultural activities that are growing into the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.

6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The state highway passes close by the wetland leading to polluting activities. New industries are being set up in the catchment area. The wetland faces a minimal threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Uthiramerur Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

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PWD (2000) Groundwater perspectives: a profile of Kancheepuram District, Tamil Nadu. Public Works Department, Tamil Nadu, June, 220 pp

Rajmohan N. and Elango L. (2005) Distribution of Iron, Mangandse, Zinc and Atrazine in Groundwater in Parts of Palar and Cheyyar River Basins, South India Environ Monit Assess 107: 115. https://doi.org/10.1007/s10661-005-5307-0

Rajmohan N. and Elango L. (2005) Nutrient chemistry of groundwater in an intensively irrigated region of Southern India. Environ Geol 47: 820. https://doi.org/10.1007/s00254-004-1212-z

Senthilkumar M. and Elango L. (2001) Numerical Simulation of Groundwater Flow Regime in a Part of The Lower Palar River Basin, Southern India Modelling in Hydrogeology, Eds: L. Elango and R. Jayakumar, UNESCO-IHP, Allied Publishers, pp.115-126

Senthilkumar M. and Elango L. (2004) Three-dimensional mathematical model to simulate groundwater flow in the lower Palar River basin, southern India Hydrogeology Journal 12: 197. https://doi.org/10.1007/s10040-003-0294-0

Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern India Hydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0

Table 9.29: List of Plant species recorded along the Uthiramerur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 4 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, | Malvaceae | Native | NA |
| 5 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 6 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Abrus precatorius* | crab's eye,Jequirity | Kundhumani | Fabaceae | Native | NA |
| 11 | *Albizia saman* | Rain Tree | Thoongumoonjimaram | Fabaceae | Exotic | NA |
| 12 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 13 | *Dalbergia sissoo* | Indian Rosewood | | Fabaceae | Native | NA |
| 14 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 17 | *Citrullus colocynthis* | Bitter Apple, Colocynth, | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 18 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 19 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 20 | *Hypertelis cerviana* | Slender Carpetweed | | Molluginaceae | Native | NA |
| 21 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 22 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 23 | *Ageratina adenophora* | Catweed, eupatory, | | Asteraceae | Naturalized | |
| 24 | *Biden spilosa* | Beggar Tick | Mukkuthi | Asteraceae | Exotic | NA |
| 25 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 26 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 27 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 28 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 29 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 30 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 31 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 32 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 33 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, | Martyniaceae | Native | NA |
| 34 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 35 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 36 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 37 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 38 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 39 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 40 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 41 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 42 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 43 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 44 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 45 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 46 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 47 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 48 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 49 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 50 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |
| 51 | *Enteropogond olichostachyus* | Finger grass | | Poaceae | Native | NA |
| 52 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.30a: List of Insects recorded along the Uthiramerur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Grasshopper species | *Spathosternum prasiniferum* | Acrididae |
| 4 | Grasshopper species | *Criotettix bispinosus* | Tetrigidae |
| 5 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 6 | Water Strider | *Gerris sp.* | Gerridae |
| 7 | Water Scorpion | *Laccotrephes griseus* | Nepidae |
| 8 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 9 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 10 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 11 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 12 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 13 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 14 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |
| 15 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 16 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 9.30b: List of Butterflies recorded along the Uthiramerur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 11 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 12 | Pioneer | *Belenois aurota* | Pierinae | Common |
| 13 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 14 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 15 | Lesser Grass Blue | *Zizina otis* | Polyommatinae | Common |
| 16 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 17 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 18 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 19 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 20 | Common Crow | *Euploea core* | Danainae | Common |
| 21 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 22 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 23 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 24 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 25 | Great Eggfly | *Hypolimnas bolina* | Nymphalinae | Common |
| 26 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.30c: List of Dragonflies and Damselflies recorded along the Uthiramerur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 9.30d: List of Arachnida recorded along the Uthiramerur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 9.30e: List of Fishes recorded form the Uthiramerur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |
| 12 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayiraimeen | Cobitidae | LC |
| 13 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.30f: List of Amphibians recorded form the Uthiramerur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Bull Forg | *Hoplobatrachus tigerinus* | Dicroglossidae | Least Concern |
| 2 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |
| 3 | Indian Pond Forg | *Euphlyctis hexadactylus* | Dicroglossidae | Least Concern |

Table 9.30g: List of Reptiles recorded along the Uthiramerur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 3 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 9.30h: List of Birds recorded along the Uthiramerur Lake

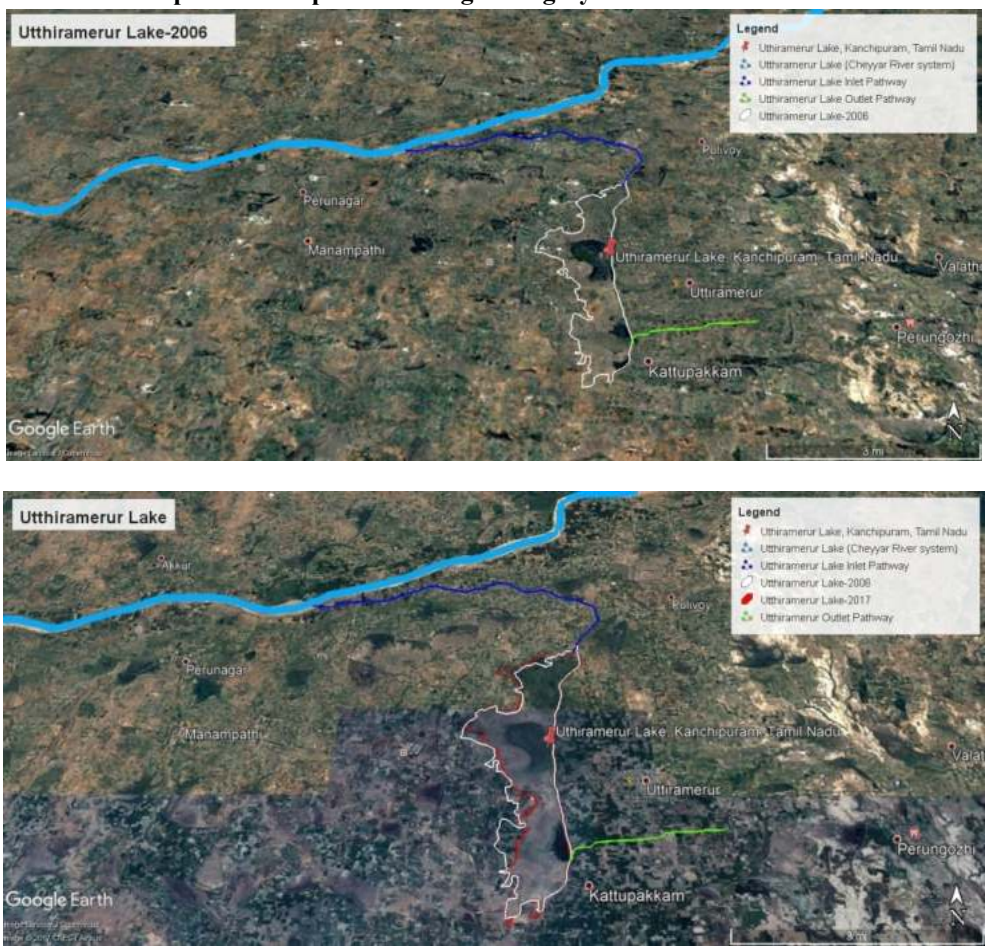
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 4 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 12 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 13 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 14 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 15 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 16 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 17 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 18 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 19 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 20 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 21 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 22 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 23 | Ashy Woodswallow | *Artamus fuscus* | Artamidae | Least Concern |
| 24 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 25 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 26 | Jerdon'sBushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 27 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 28 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 29 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 30 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 31 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 32 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 33 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 34 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

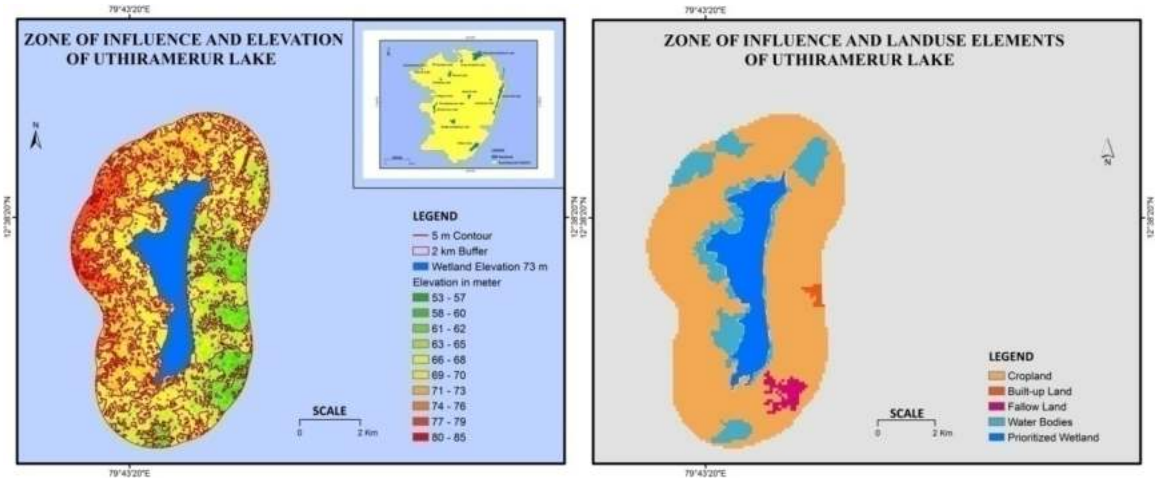
Table 9.30i: List of Mammals recorded along the Uthiramerur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.28: Comparative Google imagery for Uthiramerur Lake**




**Map 9.29: The zone of influence around the UthiramerurLake.**



**Uthukadu Lake**

Uthukadu is a small village in Walajabad panchayat union, Kancheepuram district. Tamil Nadu state highway 48 is passes through Uthukadu village. There are many temples in Uthukadu. Carnivals are celebrated for each temple in different periods.

**Lake Survey Number**: 1 to 811 includes the survey numbers for all the surrounding villages.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Uthukadu Lake (Plate 24).
1.2 Villages that surround the wetland include Uthukadu, Puthagaram, Neikuppam, Kaliyanur, Vaiyavur.
1.3 & 1.4 The lake is based in Kancheepuram District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 12° 49'53.2" N; 12° 49'38.5" N; 12° 49'28.7" N and Longitude: 079° 47'32.7" E; 079° 47'23.4" E; 079° 47'07.7" E
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 219 hectares (Map 9.30).
2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Tank.
2.3 Based on the secondary information the average depth is 4 meters for the wetland.
2.4 The elevation of the wetland is 66 to 74 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
   b) The water in the wetland is mostly of permanent nature.
   c) The water from the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in the replenishing the groundwater.
   d) The pH of the water was observed to be alkaline and recorded up to 8.5.
   e) The lake has fresh water with the salinity recorded at 0.389 ppt at the time of sampling.
   f) The wetland was observed to be closer to Oligotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surroundingvillages.
2.6 Climatic setting
   a) Rainfallfor the month of December in Kancheepuram was 68.2 mm.
   b) The atmospheric temperature varied between 29.5 to 30.9 °C and the humidity was 46%.
2.7 The area of zone of influence is 2543.27 hectares with a fixed buffer area of 2 kms around the wetland(Map 9.31).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Agriculture80%, | Settlements (rural) 20%, |
| Settlements (Urban) 0%, | Forest 0%, |
| Grasslands 0%, | Industries 0%. |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 9.30& 9.31.

**Section III- Biodiversity**

3.1 List of Plant species: 58 species of plants were recorded around the wetland during our visit ( Table 9.31).
3.2 List of animal species: 111 faunal species excluding 2 domestic species were recorded during the survey (List attached - Table 9.32a-i)
3.3 Species of Conservation importance: Common species of birds were observed during the survey (Table 9.32a-i)
3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is a recreational option in the wetland for many and fishing is not a livelihood option.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge and overflow form the wetlands passes to the Marutham village.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although it is not for any the commercial purpose.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial fishing activity but only some recreational fishery is undertaken by local children and adults during their free time.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland and not within the wetland.
5.4 Grazing by the cattle were observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.
6.5 The wetland does not have any idol immersion but solid waste dumping and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water from the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Uthukadu Lake


Bettina Weiz (2005) Water Reservoirs in South India- An anthropological approach Ph.D. Thesis Ludwig-Maximilians-Universität München. Pp 299.

Dubey D.P. (1996) Rays and ways of Indian Culture.Published by Vijay K Gupta, M.D. Publications Pvt. Ltd, New Delhi.pp. 241.

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Rajmohan N. and Elango L. (2005) Distribution of Iron, Mangandse, Zinc and Atrazine in Groundwater in Parts of Palar and Cheyyar River Basins, South India Environ Monit Assess 107: 115. https://doi.org/10.1007/s10661-005-5307-0

Rajmohan N. and Elango L. (2005) Nutrient chemistry of groundwater in an intensively irrigated region of Southern India. Environ Geol 47: 820. https://doi.org/10.1007/s00254-004-1212-z

Senthilkumar M. and Elango L. (2011) Modelling the impact of a subsurface barrier on groundwater flow in the lower Palar River basin, southern IndiaHydrogeol J 19:917.https://doi.org/10.1007/s10040-011-0735-0


Table 9.31: List of Plant species recorded along the Uthukadu Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nymphaea alba* | Nilofar, White water lily | Neytarkilanku, Neytal, | Nymphaeaceae | Native | LC |
| 2 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 3 | *Portulaca oleracea* | Indian Parseland | Paruppukeerai, Pulikkeerai | Portulacaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Malvastrumcoromandelianum subsp. coromandelianum* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 11 | *Mangifera indica* | Mango | Ma | Anacardiaceae | Native | DD |
| 12 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 13 | *Caesalpinia pulcherrima* | Peacock Flower, Pride of Barbados, Dwarf poinciana | Mayurkonrai | Fabaceae | Native | |
| 14 | *Dalbergia sissoo* | Indian Rosewood | | Fabaceae | Native | NA |
| 15 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 16 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 17 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 18 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 19 | *Terminalia arjuna* | Arjun | Marudhu | Combretaceae | Native | NA |
| 20 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 21 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 22 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 23 | *Oldenlandiaum bellata* | Chay Root, Indian madder, | Chayam, Chayaver, | Rubiaceae | Native | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 24 | *Spermacoceo cymoides* | Purple leaved button | | Rubiaceae | Native | LC |
| 25 | *Emilia sonchifolia* | Purple Sow Thistle | Muyalchevi | Asteraceae | Native | NA |
| 26 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 27 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 28 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 29 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 30 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 31 | *Marsdenia volubilis* | Sneeze Wort, Cotton milk plant | Kotippalai | Apocynaceae | Native | NA |
| 32 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 33 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 34 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 35 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 36 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 37 | *Physalis angulata* | Cutleaf Ground Cherry | | Solanaceae | Native | LC |
| 38 | *Solanum mauritianum* | Tree Tobacco, Woolly Nightshade, Wild Tobacco, | | Solanaceae | Naturalized | |
| 39 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 40 | *Barleria buxifolia* | Box-Leaved Barleria | Kattimullu, Rosmullippuntu | Acanthaceae | Native | NA |
| 41 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 42 | *Ocimum tenuiflorum* | Holy basil,tulsi | Tulsi | Lamiaceae | Native | NA |
| 43 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 44 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 45 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 46 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 47 | *Celosia argentea* | Silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 48 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 49 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 50 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 51 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 52 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 53 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 54 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 55 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 56 | *Echinochloa crus-galli* | Barnyard Grass | | Poaceae | Native | LC |
| 57 | *Eragrostis amabilis* | Japandse Lovegrass | | Poaceae | Native | NA |
| 58 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.32a: List of Insects recorded along the Uthukadu Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Black and White Six spot Ground Beetle | *Anthia sexguttata* | Carabidae |
| 7 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 8 | Giant Honey Bee | *Apis dorsata* | Apidae |
| 9 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 10 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 9.32b: List of Butterflies recorded along the Uthukadu Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 11 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 12 | Pioneer | *Belenois aurota* | Pierinae | Common |

| | | | | |
|---|---|---|---|---|
| 13 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 14 | Common Pierrot | *Castalius rosimon* | Polyommatinae | Common |
| 15 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 16 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 17 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 18 | Common Crow | *Euploea core* | Danainae | Common |
| 19 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 20 | Common Leopard | *Phalanta phalantha* | Heliconiinae | Common |
| 21 | Common Sailer | *Neptis hylas* | Limenitinae | Common |
| 22 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 23 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 24 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |
| 25 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 26 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 27 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 28 | Great Eggfly | *Hypolimnas bolina* | Nymphalinae | Common |
| 29 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 9.32c: List of Odonata recorded along the Uthukadu Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Blue Dart | *Pseudagrion microcephalum* | Coenagrionidae | Common |
| 4 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 5 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 8 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 9 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 10 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 11 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 9.32d: List of Arachnida recorded along the Uthukadu Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 9.32e: List of Fishes recorded form the Uthukadu Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 10 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 11 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 13 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |
| 14 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayiraimeen | Cobitidae | LC |
| 15 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 16 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |
| 17 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 18 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 19 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 20 | *Notopterus notopterus* | Featherback | Chottavaalaimeen | Notopteridae | LC |
| 21 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 9.32f: List of Amphibians recorded form the Uthukadu Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |

Table 9.32g: List of Reptiles recorded along the Uthukadu Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 3 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 4 | Water Snake | *Xenochrophis piscator* | Colubridae | Least Concern |

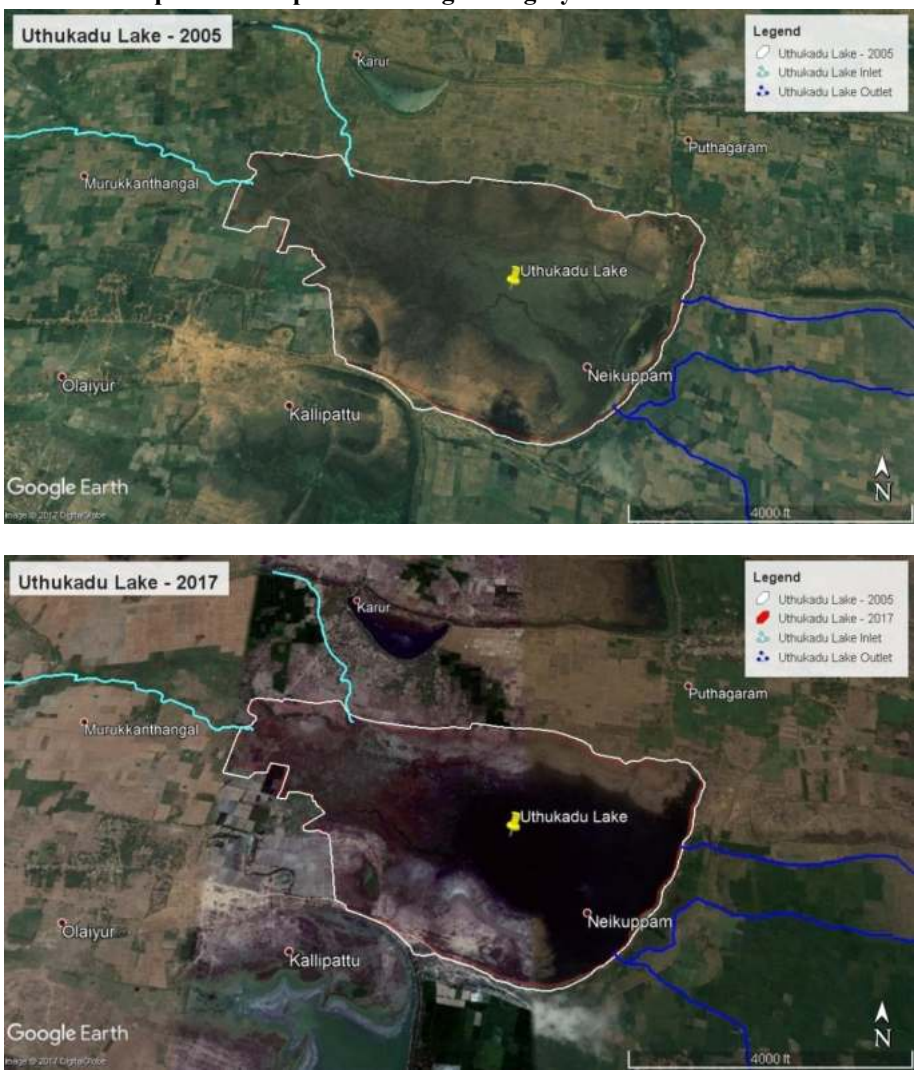
Table 9.32h: List of Birds recorded along the Uthukadu Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 5 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 11 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 12 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 13 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 14 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 15 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 16 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 17 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 18 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 19 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 20 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 21 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 22 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 23 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 24 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 25 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 26 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 27 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 28 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 29 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 30 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

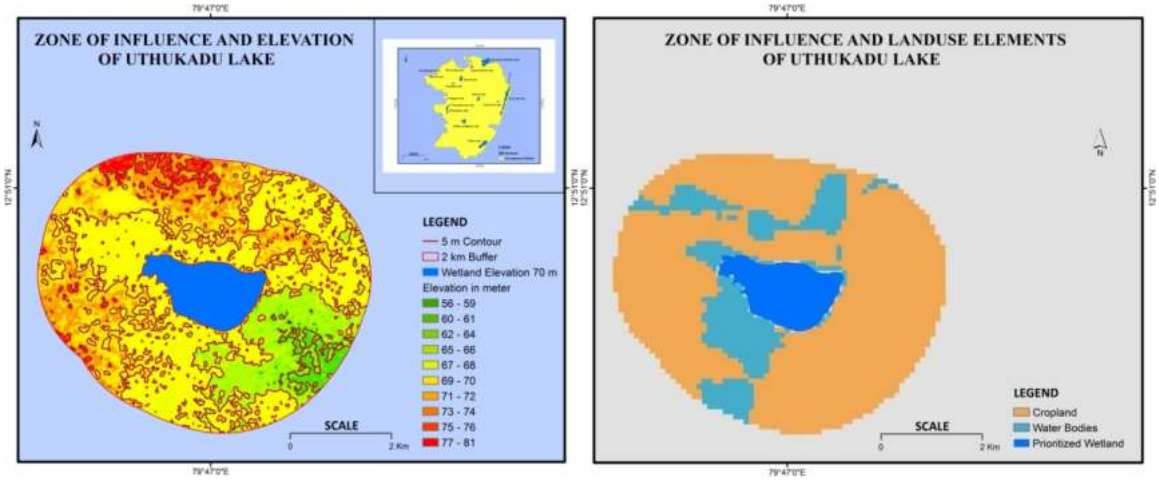
Table 9.32i: List of Mammals recorded along the Uthukadu Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos Taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 9.30: Comparative Google imagery for Uthukadu Lake**




**Map 9.31: The zone of influence around the Uthukadu Lake.**



## 10. Kanyakumari district

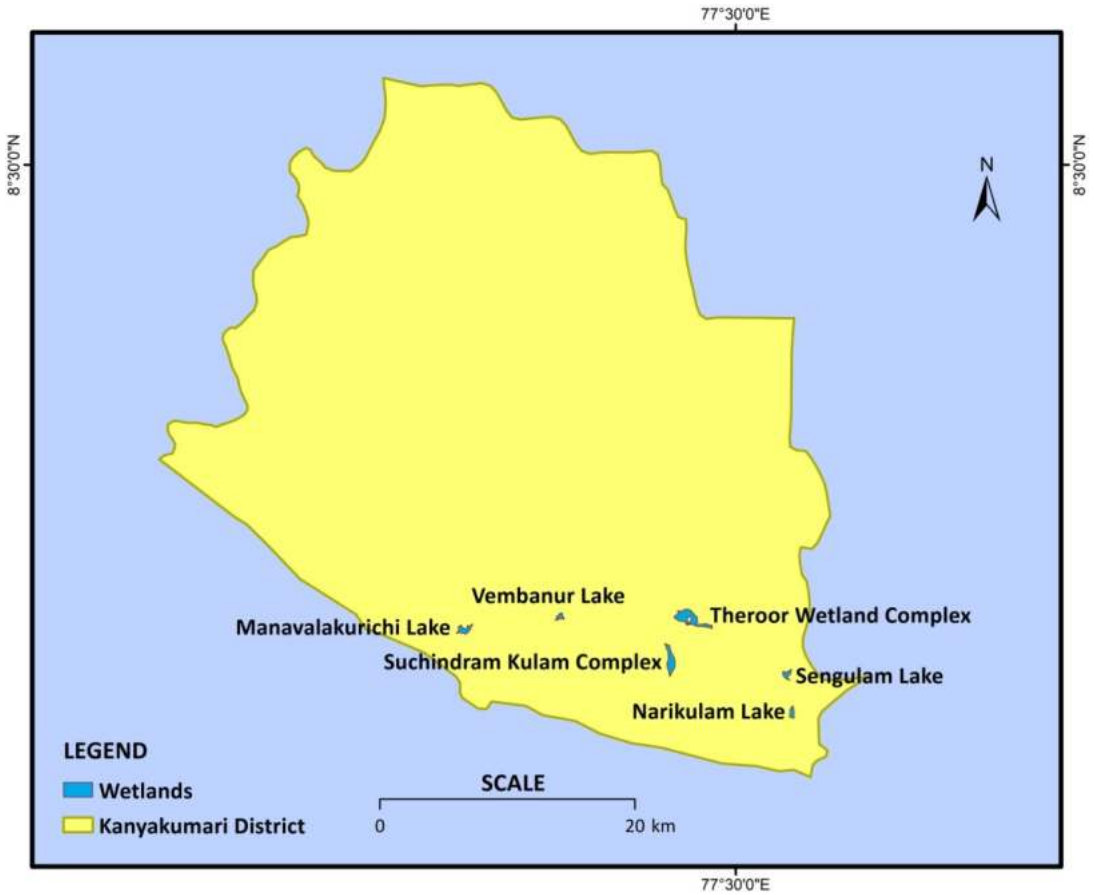
### 1. Introduction

**Kanyakumari district** is the southernmost district in Tamil Nadu state and mainland India. It stands second in terms of population density among the districts of Tamil Nadu and the second most urbanized, next only to Chennai district. Kanyakumari district has a varied topography with sea on three sides and the mountains of the Western Ghats bordering the northern side. The district shares common boundary with Tirunelveli District on the North and east. The South Eastern boundary is the Gulf of Mannar. On the South and the South West, the boundaries are the Indian Ocean and the Arabian Sea. On the West and North West it is bounded by Kerala state.

The district offers undulating valleys and plains between the mountainous terrain and the sea - coast. Major tourist attractions in the district include Pechiparai dam, Tirparappu water falls, Muttom beach, Sanguthurai beach, Chothavilai beach, and Bay watch (water theme amusement park).

Total geographic area of Kanyakumari is 1672 km². Total area under wetland is 7937 ha, which includes 654 small wetland (<2.25 ha). Major wetland types of the district are Reservoirs (3747 ha), Tanks/ponds (1109 ha), River/Stream (799 ha) and Inter-tidal mudflats (409 ha).

SACON during 2004 had prioritized four wetlands form Kanyakumari district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these four wetlands to assess its present potential for conservation. (Map10.1). In addition, two more wetlands were selected based oninternet portal data and google imagery.




**Map 10.1: Wetlands of Kanyakumari district assessed for Prioritization**

**Observations**

Of the Sixwetlands selected in the district, Theroor lake is the largest while Vembanur is the smallest of the six wetlands. Around the wetlands, we recorded 177 plant species both aquatic and terrestrial including 19 invasive species (Table 10.1). The faunal components totaled 143 species with the representation of 53 bird species of including the wetland birds. Among the wetlands, Manavalakurichikulam and Narikulam were oligotrophic while the other four were Mesotrophic in status (Table 10.2). The water was found to have higher levels of lesser elements as compared to the soil in all the wetlands studied in the district.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum diversity of invasives was recorded in the oligotrophic Narikulam. The agriculture practices around all the wetlands seem to have a major influence on the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation

1. Vembanur Lake
2. Sengulam Lake
3. Narikulam Lake
4. Theroor Wetland Complex
5. Suchindram Kulam Complex
6. Manavalakurichi Lake

Table 10.1: The flora and fauna recorded form the wetlands of Kanyakumari District

| S. No | Name of the Wetland | Plants (Invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Suchindram Kulam Complex | 71(12) | 8 | 5 | 25 | 2 | 16 | 0 | 1 | 41 | 2 |
| 2 | Theroor Wetland Complex | 57(10) | 6 | 11 | 19 | 1 | 18 | 0 | 1 | 33 | 3 |
| 3 | Vembanur Lake | 43(8) | 2 | 5 | 8 | 1 | 12 | 0 | 1 | 23 | 2 |
| 4 | Manavalakurichi Lake | 47(9) | 1 | 5 | 7 | 1 | 11 | 0 | 2 | 22 | 1 |
| 5 | Sengulam Lake | 65(10) | 7 | 7 | 5 | 1 | 4 | 0 | 1 | 9 | 4 |
| 6 | Narikulam Lake | 86(14) | 12 | 9 | 7 | 1 | 7 | 0 | 1 | 17 | 2 |
| | Total | 177(19) | 19 | 14 | 31 | 2 | 18 | 0 | 2 | 53 | 4 |

Table 10.2: The water and soil quality assessed form the wetlands of Kanyakumari District

| **District Name** | Kanyakumari | | | | | |
|---|---|---|---|---|---|---|
| **Wetland Name** | Sengulam Lake | Narikulam Lake | Suchindram Kulam Complex | Theroor Wetland Complex | Vembanur Lake | Manavalakurichi Lake |
| **Wetland area (ha)** | 28 | 26 | 96.6 | 163 | 20 | 47 |
| **Buffer Area in Hectare (ha)** | 1774.91 | 1725.47 | 2399.53 | 2718.33 | 1681.5 | 1966.5 |
| **Air Temperature °C** | 31 | 30.2 | 29.5 | 29.3 | 29.5 | 28.1 |
| **Water Temperature °C** | 27.9 | 27.5 | 29.1 | 28.1 | 28 | 29.4 |
| **Humidity %** | 66 | 75 | 76 | 80 | 71 | 71 |
| **Nutrients in Water** | Mesotrophic | Oligotrophic | Mesotrophic | Mesotrophic | Mesotrophic | Oligotrophic |
| **Water pH** | 8.1 | 8.7 | 7.5 | 8.3 | 6.7 | 7.2 |
| **Water TDS ppm** | 197 | 139 | 136 | 90 | 147 | 136 |
| **Water Conductivity ppm** | 274 | 208 | 176 | 304 | 182 | 265 |
| **Light Penetration cms** | 197 | 236 | 94 | 73 | 135 | 72 |
| **Water Salinity ppt** | 0.134 | 0.102 | 0.389 | 0.389 | 0.174 | 0.102 |
| **DO mg/L** | 6.10 | 3.86 | 11.59 | 8.74 | 8.74 | 7.52 |
| **PO4P mg/L** | 0.042 | 0.010 | 0.083 | 0.017 | 0.010 | 0.023 |
| **Water Na ppm** | 911 | 1079 | 13.8 | 20.8 | 25.5 | 33 |
| **Water K ppm** | 2.9 | 3.85 | 1.75 | 3.3 | 1.45 | 4.07 |
| **Water Li ppm** | 0.4 | 0.5 | 0.1 | 0.1 | 0.1 | 0 |
| **Water Ca ppm** | 102.95 | 108.65 | 45.1 | 56.11 | 33.3 | 25.85 |
| **Soil Colour code** | 5YR 5/4 | 10YR 6/4 | 5YR 5/6 | 2.5YR 6/4 | 7.5YR 5/6 | 10YR 5/8 |
| **Soil Colour** | Reddish Brown | Light Yellowish Brown | Yellowish Red | Light Reddish Brown | Strong Brown | Yellowish Brown |
| **Soil pH** | 7.49 | 7.86 | 6.96 | 7.55 | 7.71 | 5.75 |
| **Soil TDS ppm** | 136 | 229 | 50.9 | 103 | 61 | 69.5 |
| **Soil Conductivity ppm** | 191 | 322 | 71.3 | 144.8 | 86.1 | 98.1 |
| **Soil Salinity ppt** | 0.093 | 0.155 | 0.039 | 0.072 | 0.045 | 0.051 |
| **Soil Na ppm** | 7.1 | 8.5 | 4.6 | 4.2 | 5.2 | 9.1 |
| **Soil K ppm** | 3.9 | 3 | 1.2 | 2 | 1.3 | 1.3 |
| **Soil Li ppm** | 0.1 | 0.1 | 0 | 0 | 0 | 0 |
| **Soil Ca ppm** | 13.6 | 27 | 4.9 | 14.8 | 5.8 | 5.6 |

**Manavalankuruchi Lake**

Manavalakurichi is a part of Kalkulam in Taluk, in Kanyakumari District.

**Lake Survey Number:** 546/2

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Manavalankuruchi Lake or Periyakulam (Plate 25).
1.2 Villages that surround the wetland include Manavalankuruchi, Kadiyapattinam, Thalakulam, Manvaikadu.
1.3 & 1.4 The lake is based in Kanyakumari District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 08° 10'27.4" N; 08° 10'18.6" N; 08° 10'14.4" N; 08° 10'11.6" N and Longitude: 077° 18'15.1" E; 077° 18'15.7" E; 077° 18'19.9" E; 077° 18'37.2" E;
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD, Kanyakumari division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 47 hectares (Map 10.2).
2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes.
2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.
2.4 The elevation of the wetland is -14 to 17 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and thePachiparai dam and perumchani dam.
   b) The water in the wetland is intermitent nature with some water present only for a few months following the rains, as the wetland is mostly dependant on the rainfall and runoff waters.
   c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the agriculture lands and joins the sea.
   d) The pH of the water was 7.2.
   e) The lake has fresh water as the salinity was 0.102 ppt.
   f) The wetland banks were completely dry and the aquatic vegetation like *Eichornea crascipes, Ipomoea* and other weeds that dominated the landscape.
2.6 Climatic setting
   a) Rainfallfor the month of January, 2018 in Kanyakumari was 32.1 mm.
   b) The atmospheric temperature was 26.2 to 28.1 °C.
2.7 The area of zone of influence is 1966.5 hectares with a fixed buffer area of 2 kms around the wetland (Map 10.3).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands / scrublands 10 %; |
| Agricultural lands 70%; | Settlements (Rural) 20%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9. The comparison of the wetland for the years 2005 and 2017 is given in Map 10.2 & 10.3.

**Section III- Biodiversity**

3.1 List of Plant species:41 species of plants were recorded around the wetland during our visit (Table 10.3).
3.2 List of animal species:50 animal species including 1 domestic species were recorded during the survey (List attached - Table 10.4a-h)
3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey but one near threatened fish species was recorded (Table 10.4a-h)

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Accacia nilotica indica*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. But there are bore wells dug in the wetland form which the water is provided for drinking.

4.2 Agriculture is undertaken around the wetland using the wetland water and borewell water is used.

4.3 Fishery is not undertaken however the recreational fishery was undertaken.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no runoff form the surrounding area.

4.10 The wetland has several large temple as well as a few small temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is majorly used by the locals for grazing their cattle and goats.

4.12 There is agriculture and plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species and there is no commercial fishery.

4.15 Around the wetland there is no encroachment but solid waste dumping was observed on a minor scale. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 There is agriculture all around the wetland.

5.4 Grazing by the cattle and sheep is undertaken

5.5 There is withdrawal of water for agriculture purpose.

5.6 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat agricultural activities and solid waste dumping that need to be regulated.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Increasing sewage and agricultural waste are a major threat that needs to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Manavalakurichikulam**

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004)Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532

Table 10.3: List of Plant species recorded along the Manavalakurichi Lake

| S. No | Scientific Name | CommonEnglishName | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermacea e | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 6 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 7 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 8 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 9 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 12 | *Hypertelis cerviana* | Slender Carpetweed | | Molluginaceae | Native | NA |
| 13 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 14 | *Ageratina adenophora* | Catweed, crofton weed, eupatory, | | Asteraceae | Naturalize d | |
| 15 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 16 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 17 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 18 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 19 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 20 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 21 | *Azima tetracantha* | Needle Bush, | Sugam cheddi, Sangilai | Salvadoraceae | Native | NA |
| 22 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 23 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 24 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 25 | *Barleria acuminata* | Long-flower Barleria | VellaiKurinji | Acanthaceae | Native | NA |
| 26 | *Ruellia patula* | Spreading Ruellia | Grandhinayakam | Acanthaceae | Native | NA |
| 27 | *Stachytarpheta jamaicensis* | Blue Porterweed | SeemaiNayuruvi | Verbenaceae | Native | NA |
| 28 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 29 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 30 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 31 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 32 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 33 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 34 | *Colocasia esculenta* | Taro, Cocoyam, Green Taro | Sempu, Shamakkilangu | Araceae | Native | LC |
| 35 | *Bulbostylisbarbata* | Water Garss | | Cyperaceae | Native | NA |
| 36 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 37 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 38 | *Axonopus compressus* | Broad leaf carpetgrass | | Poaceae | Native | NA |
| 39 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 40 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 41 | *Digitaria bicornis* | Asian Crabgrass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.4a: List of Insects recorded along the Manavalakurichi Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |

Table 10.4b: List of Butterflies recorded along the Manavalakurichi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 4 | Indian Cupid | *Everes lacturnus* | Polyommatinae | Common |
| 5 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 6 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 7 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 10.4c: List of Dragonflies recorded along the Manavalakurichi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Safforn-faced Blue Dart | *Pseudagrion rubriceps* | Coenagrionidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 10.4d: List of Arachnida recorded along the Manavalakurichi Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 10.4e: List of Fish recorded form the Manavalakurichi Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 7 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.4f: List of Reptiles recorded along the Manavalakurichi Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 10.4g: List of Birds recorded along the Manavalakurichi Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 3 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 6 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 7 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 8 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 9 | Bronze-winged Jacana | *Metopidius indicus* | Jacanidae | Least Concern |
| 10 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 11 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 12 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 13 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 14 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 15 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 16 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 17 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 18 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 19 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 20 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 21 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 22 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

Table 10.4h: List of Mammals recorded along the Manavalakurichi Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |

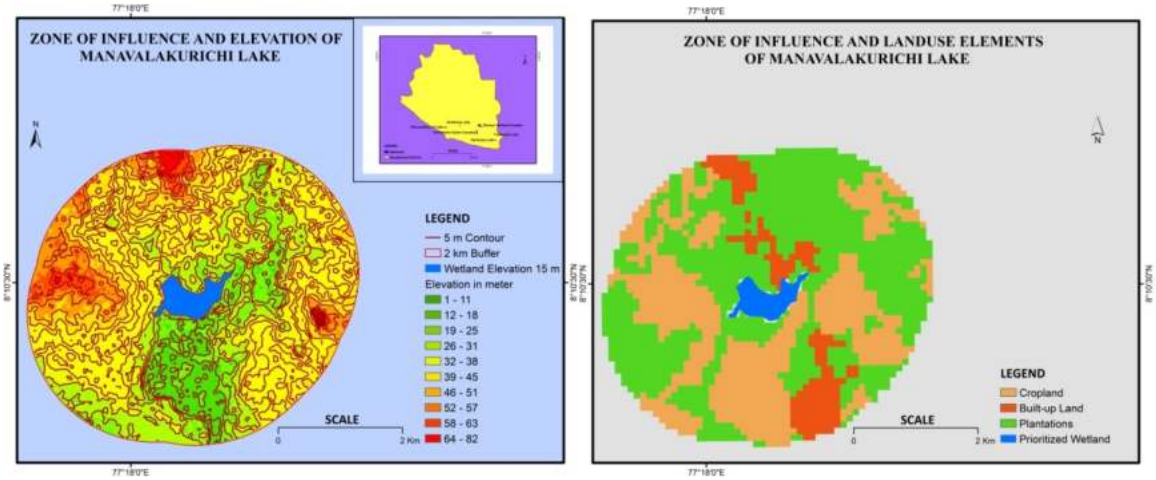
**Map 10.2: Comparative Google imagery for Manavalakurichi Lake**







**Map 10.3: The zone of influence around the Manavalakurichi Lake.**



**Narikulam Lake**

**Lake Survey Number**: 351.

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as Narikulam Lake (Plate 25).

1.2 Villages that surround the wetland include Perumal Puram, Mahadanapuram, Panjalingapuram, Agastheeswaram.

1.3 & 1.4 The lake is based in Agastheeswaram taluka in Kanyakumari District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 06'37.2" N; 08° 06'38.5" N; 08° 06'52.7" N; 08° 06'57.9" N; and Longitude: 077° 32'24.5" E; 077° 32'28.0" E; 077° 32'27.8" E; 077° 32'27.6" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 26 hectares (Map 10.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lake.

2.3 Based on the secondary information the average depth is 2.5 to 4 meters for the wetland.

2.4 The elevation of the wetland is 20 to 23 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area and Pechiparai dam.
b) The water in the wetland is mostly of permanent nature.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was 8.1 to 9.3.
e) The lake has fresh water as the salinity was 0.102 ppt.
f) The wetland was observed to have both terrestrial vegetation along with the aquatic vegetation.

2.6 Climatic setting

a) Rainfallfor the month of December in Kanyakumari was 32.1 mm.
b) The atmospheric temperature was 29.4 to 30.2°C and Humidity was 75 to 79 %

2.7 The area of zone of influence is 1725.47 hectares with a fixed buffer area of 2 kms around the wetland (Map 10.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland & Shrubland 0 %; |
| Agriculture 60%; | Rural Settlements 40%; |
| Settlements (Urban) 0%; | Industries 0 % |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 10.4 & 10.5.

**Section III- Biodiversity**

3.1 List of Plant species: 80 species of plants were recorded around the wetland during our visit (Table 10.5).

3.2 List of animal species: 56 animal species including 2 domestic species were recorded during the survey (Table 10.6a-h)

3.3 Species of Conservation importance: Two near Threatened species of birds and fish were observed during the survey (Table 10.6a-h)

3.4 Major Plant invasive alien species and extent of invasion: 14 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornia crassipes, Typha anguistofolia* and *Ipomoea sp.*formed nearly 80 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion – Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The village has borewells for their regular needs. The municipality also provides water through the borewells.
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 Fishery is undertaken with permission in the lake, a tender system is followed by the PWD. However for the past four years it is only individual who is given the tender.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetlands recives some minor population of nature enthusiast as tourist to the bird sanctuary.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments.
4.10 The wetland does not have any temples.
4.11 The wetland is used by locals for agriculture and extraction of water only.
4.12 There is agriculture and plantation activities around the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a diversity of fishery the commercial fishery is practiced.
4.15 There is mining for sand or silt undertaken with permission.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken. But tenders are given out on annual basis.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken around the wetland.
5.5 There is withdrawal of water from the wetland is for agriculture.
5.6 The wetland is used for bathing by livestock and human.

**Section VI Present and potential threats**

6.1 The wetland does show major change in the pattern of water inflow and outflow.
6.2 There is organized fishing activity.
6.3 There are few invasive plant species that is changing the habitat of the wetland.
6.4 Construction of new highway has bifurcated the wetland with a rich diversity.

**Section VII Notification Category**

The wetland is not protected and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form construction of road by the local government

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Solid waste dumping and rampant agriculture should be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available forNarikulam

Table 10.5: List of Plants recorded along the Narikulam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Portulaca oleracea* | Indian Parseland | Paruppukeerai, Pulikkeerai | Portulacaceae | Native | NA |
| 4 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattukasturi | Malvaceae | Native | NA |
| 5 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Muntingia calabura* | Jamaica Cherry | Thenpazham | Muntingiaceae | Exotic | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 11 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 12 | *Crotalaria verrucosa* | Blue Rattlepod, blue flowerd crotalaria, blue flower rattlepod, purple popbush, shack-shack, tooth leaf rattlepod | Cankuniti, Kilukilupai | Fabaceae | Native | NA |
| 13 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 14 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 15 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 16 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 17 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 18 | *Senna occidentalis* | Coffee senna | Nattamtakarai, Payaverai | Fabaceae | Native | NA |
| 19 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 20 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 21 | *Corymbia citriodora* | Lemon Scented Gum, Lemon Gum, Blue spotted gum, Lemon eucalyptus | | Myrtaceae | Introduced | |
| 22 | *Turner asubulata* | White Alder | | Turneraceae | Invasive | NA |
| 23 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 24 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 25 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 26 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 27 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 28 | *Oldenlandiaum bellata* | Chay Root, Indian madder, Choy root | Chayam, Chayaver, Emboorel, Imbura-ver | Rubiaceae | Native | |
| 29 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 30 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 31 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 32 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 33 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 34 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 35 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 36 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 37 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 38 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 39 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 40 | *Physalis angulata* | Cutleaf Ground Cherry | | Solanaceae | Native | LC |
| 41 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 42 | *Pedalium murex* | Large caltrops | Yanainerunji,Perunerunji | Pedaliaceae | Native | NA |
| 43 | *Barleria acuminata* | Long-flower Barleria | VellaiKurinji | Acanthaceae | Native | NA |
| 44 | *Barleria buxifolia* | Box-Leaved Barleria | Kattimullu, Rosmullippuntu | Acanthaceae | Native | NA |
| 45 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 46 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 47 | *Justicia adhatoda* | Malabar Nut, white vasa, | acalai, atatotai, attucam, | Acanthaceae | Native | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | yellow vasa | cimma-muki, cinkam, cuvatu, iratta-pittam, kattu-murunkai, pavattai, vacai, vacati | | | |
| 48 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 49 | *Stachytarpheta jamaicensis* | Blue Porterweed | SeemaiNayuruvi | Verbenaceae | Native | NA |
| 50 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 51 | *Mesosphaerum suaveolens* | American mint, Bush mint, Chan, Horehound, Pignut, Stinking roger, Wild spikenard | | Lamiaceae | Naturalized | NA |
| 52 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 53 | *Vitex negundo* | Chaste Tree | Nocchi | Lamiaceae | Native | NA |
| 54 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 55 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 56 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 57 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 58 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 59 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 60 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 61 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 62 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 63 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 64 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhandlli | Phyllanthaceae | Native | NA |
| 65 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 66 | *Hydrilla verticillata* | Water Thyme, hydrilla | amiranappaci, cikavalakam, cimpaka | Hydrocharitaceae | Native | LC |
| 67 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 68 | *Cyanotis axillaris* | Creeping Cradle Plant | Vazhukaipul | Commelinaceae | Native | LC |
| 69 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 70 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 71 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 72 | *Pistia stratiotes* | Water cabbage, Nile cabbage,Tropicalduckweed, water lettuce | Agasatamarai,Agayattamarai | Araceae | Native | LC |
| 73 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kottikizhangu | Aponogetonaceae | Native | LC |
| 74 | *Potamogeton perfoliatus* | Clasping pondweed, Perfoliate pondweed, | | Potamogetonaceae | Native | LC |
| 75 | *Aristida adscensionis* | | | Poaceae | Native | NA |
| 76 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 77 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 78 | *Poa annua* | Annual Bluegrass, Annual Meadow Grass | | Poaceae | Naturalized | LC |
| 79 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 80 | *Azolla caroliniana* | Mosquito fern,Water velvet | | Salviniaceae | Introduced | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.6a: List of Insects recorded along the Narikulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Mantis Egg | *Ootheca* | Mantodae |
| 2 | Common Red Soldier Beetle | *Rhagonycha sp.* | Cantharidae |
| 3 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Giant Honey Bee | *Apis dorsata* | Apidae |
| 6 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 9 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 10 | Spider Wasp | *Pompilidae sp.* | Pompilidae |
| 11 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |
| 12 | House fly | *Musca domestica* | Muscidae |

Table 10.6b: List of Butterflies recorded along the Narikulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 6 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 7 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 10.6c: List of Odonates recorded along the Narikulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Trumpet Tail | *Acisoma panorpoides* | Libellulidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 10.6d: List of Arachnida recorded along the Narikulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 10.14e: List of Fishes recorded along the Narikulam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 4 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 5 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 6 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 7 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.6f: List of Reptiles recorded along the Narikulam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 10.6g: List of Birds recorded along the Narikulam Lake

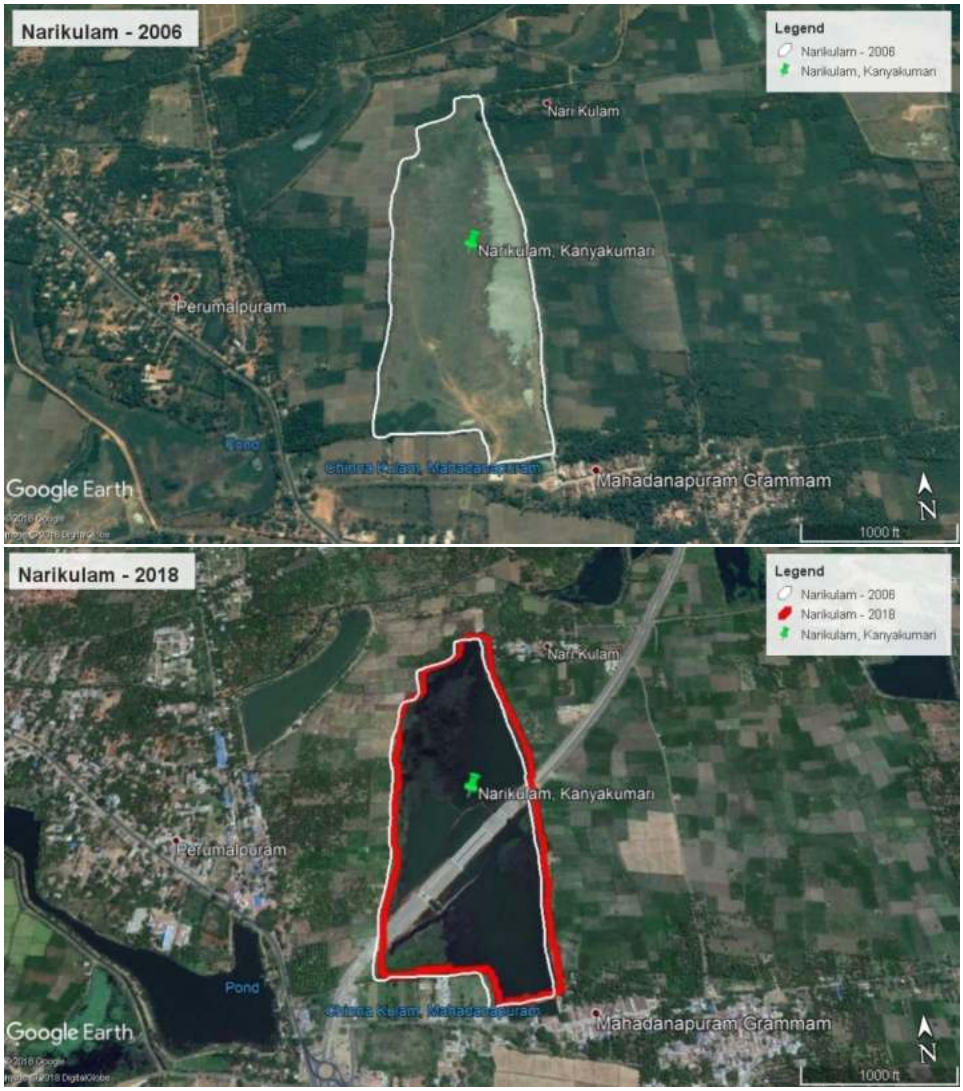
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cotton Pygmy-goose | *Nettapus coromandelianus* | Anatidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 4 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 5 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 6 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 10 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 11 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 12 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 13 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 14 | Coppersmith Barbet | *Megalaima haemacephala* | Megalaimidae | Least Concern |
| 15 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 16 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 17 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

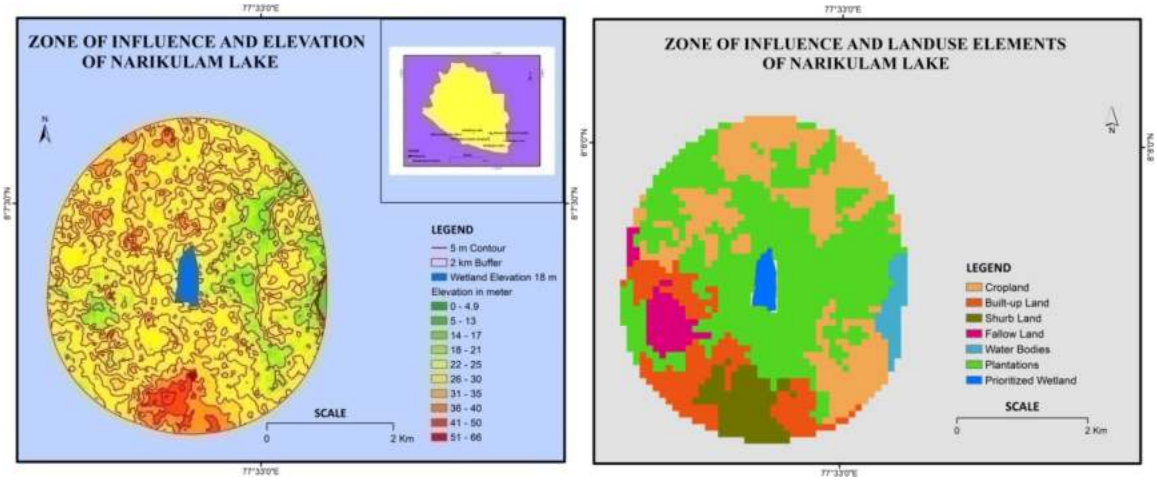
Table 10.6h: List of Mammals recorded along the Narikulam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 10.4: Comparative google imagery for Narikulam Lake**




**Map 10.5: Map showing the zone of influence for Narikulam Lake.**



**Sengulam Lake**

**Lake Survey number**: 193.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Sengulam Lake (Plate 26).

1.2 Villages that surround the wetland include Pottalkulam, Alagappapuram, Triumooaanagar.

1.3 & 1.4 The lake is based in Agastheeswaram taluka in Kanyakumari District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 08'14.2" N; 08° 08'20.4" N; 08° 08'31.1" N; 08° 08'40.2" N; and Longitude: 077° 32'17.2" E; 077° 32'11.7" E; 077° 32'19.3" E; 077° 32'21.2" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 28 hectares (Map 10.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lake.

2.3 Based on the secondary information the average depth is 2.5 to 4 meters for the wetland.

2.4 The elevation of the wetland is 28 to 34 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area and and inflow form MambalathuriarRiver.
b) The water in the wetland is mostly of permanent nature.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was 7.8 to 8.1.
e) The lake has fresh water as the salinity was 0.134 ppt.
f) The wetland was observed to have both terrestrial vegetation along with the aquatic vegetation.

2.6 Climatic setting

a) Rainfallfor the month of December in Kanyakumari was 32.1 mm.
b) The atmospheric temperature was 30.9 to 31.1°C and Humidity was 61 to 66 %.

2.7 The area of zone of influence is 1774.91 hectares with a fixed buffer area of 2 kms around the wetland (Map 10.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland & Shrubland 0 %; |
| Agriculture 70%; | Rural Settlements 30%; |
| Settlements (Urban) 0%; | Industries 0 %. |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 10.6 & 10.7.

**Section III- Biodiversity**

3.1 List of Plant species: 60 species of plants were recorded around the wetland during our visit (Table 10.7).

3.2 List of animal species: 35 animal species including 3 domestic species were recorded during the survey (Table 10.8a-h)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 10.8a-h)

3.4 Major Plant invasive alien species and extent of invasion: 10 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornia crassipes, Typha anguistofolia* and *Ipomoea sp.* formed nearly 80 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The village has borewells for their regular needs. The municipality also provides water through the borewells
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 Fishery is undertaken with permission in the lake, a tender system is followed by the PWD.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.7 It is a major source of ground water recharge.
4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments.
4.10 The wetland does have few temples and cultural activities are conducted.
4.11 The wetland is used by locals for agriculture and extraction of water only.
4.12 There is agriculture and plantation activities around the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a diversity of fishery the commercial fishery is practiced.
4.15 There is mining for sand or silt undertaken with permission.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken. But tenders are given out on annual basis.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken around the wetland.
5.5 There is withdrawal of water from the wetland is for agriculture.
5.6 The wetland is used for bathing by livestock and human.

**Section VI Present and potential threats**

6.1 The wetland does show major change in the pattern of water inflow and outflow.
6.2 There is organized fishing activity.
6.3 There are few invasive plant species that is changing the habitat of the wetland.
6.4 Release of sewage and garbage dumping is on an increase.

**Section VII Notification Category**

The wetland is not protected and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form dumping of garbage.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Solid waste dumping and rampant agriculture should be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no literature available for Sengulam Lake

Table 10.7: List of plants recorded along the Sengulam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 3 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 4 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 5 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 6 | *Malvastrum coromandelianum subsp. coromandelianum* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 7 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 8 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 9 | *Muntingia calabura* | Jamaica Cherry | Thenpazham | Muntingiaceae | Exotic | NA |
| 10 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 11 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 12 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 13 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 14 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 15 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 16 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 17 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 18 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 19 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 20 | *Carica papaya* | Papaya Tree | Papalimaram | Caricaceae | Native | DD |
| 21 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 22 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 23 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 24 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 25 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 26 | *Madhucalongifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 27 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 28 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 29 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 30 | *Trichodesma indicum* | Indian Borage | Kallutaitumapi | Boraginaceae | Native | NA |
| 31 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 32 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 33 | *Ipomoea obscura* | Obscure Morning Glory | Chirutali, Kuruguttali, Sirudali | Convolvulaceae | Invasive | NA |
| 34 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 35 | *Solanum nigrum* | Black nightshade,Blackberrynightshade,Poison berry | Manathakkali | Solanaceae | Native | NA |
| 36 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 37 | *Tecoma stans* | Yellow bells | Sonnapatti | Bignoniaceae | Exotic | NA |
| 38 | *Barleria prionitis* | Porcupine Flower | Semmulli, Korantam | Acanthaceae | Native | NA |
| 39 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 40 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 41 | *Orthosiphon pallidus* | Pale Java Tea | | Lamiaceae | Native | |
| 42 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 43 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 44 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 45 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 46 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 47 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 48 | *Euphorbia tirucalli* | Pencil Tree, Firestick Plants, Indian Tree SpurgeSticks on Fire | Cakkalavi, catukalavi, kalli | Euphorbiaceae | Naturalized | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 49 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 50 | *Tragia plukenetii* | Cannabis Leaf Nettle, Noseburn | | Euphorbiaceae | Native | |
| 51 | *Phyllanthus maderaspatensis* | Madras Leaf flower | Nilandlli | Phyllanthaceae | Native | NA |
| 52 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 53 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 54 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 55 | *Pistia stratiotes* | Water cabbage, Nile cabbage,water lettuce | Agasatamarai,Agayatta marai | Araceae | Native | LC |
| 56 | *Cyperus rotundus* | Common nut sedge, coco grass, nutgrass, purple nutsedge | Korai, korai kilangu, muthakasu | Cyperaceae | Native | LC |
| 57 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 58 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 59 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 60 | *Tetrapogon roxburghiana* | Windmill grass | | Poaceae | Native | |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.8a: list of Insects recorded along the Sengulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 7 | Orange Spider Wasp | *Cryptocheilus bicolor* | Pompilidae |

Table 10.8b: list of Butterflies recorded along the Sengulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | African Marbled Skipper | *Gomalia elma* | Pyrginae | Uncommon |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Indian Sunbeam | *Curetis thetis* | Curetinae | Uncommon |
| 5 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 10.8c: list of Odonates recorded along the Sengulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 7 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 10.8d: list of Arachnida recorded along the Sengulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 10.8e: list of Fishes recorded form the Sengulam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 2 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 3 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 4 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.8f: list of Reptiles recorded along the Sengulam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

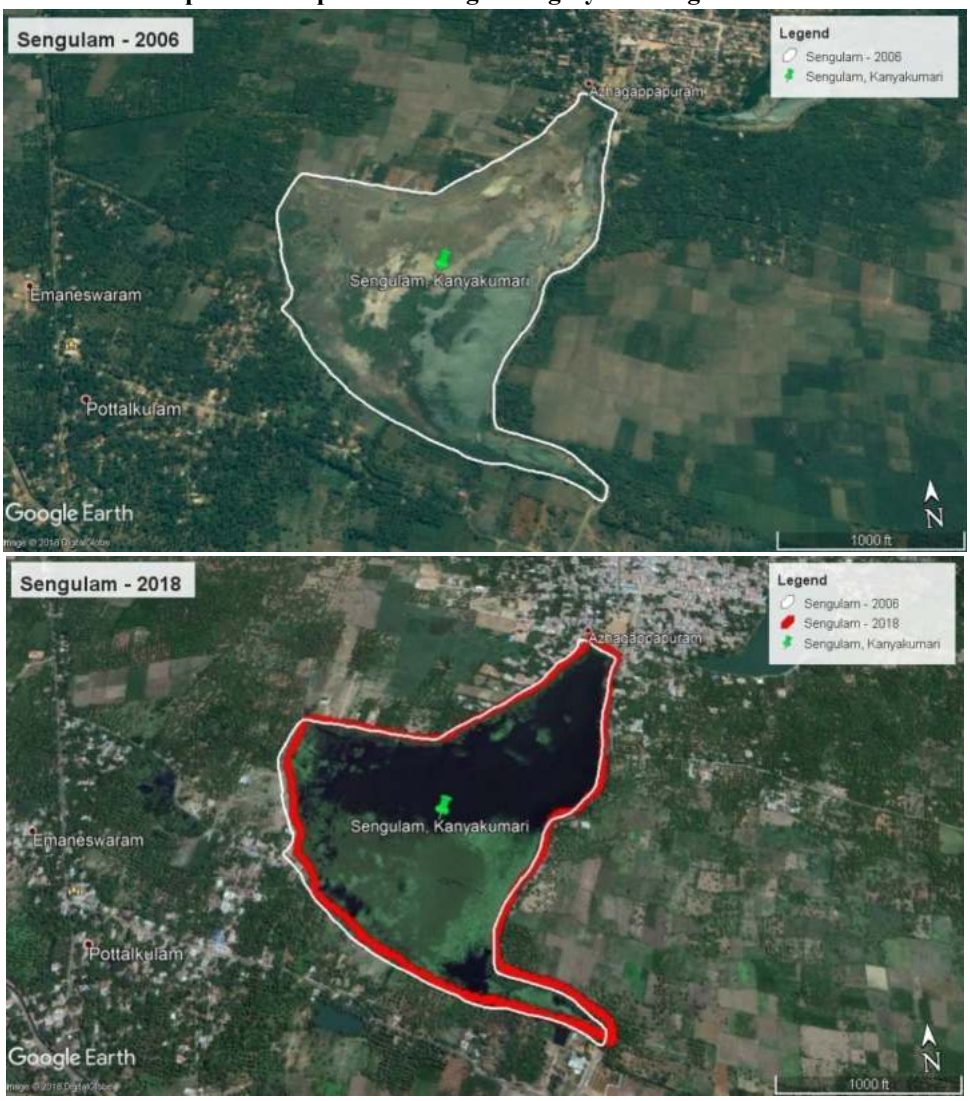
Table 10.8g: list of Birds recorded along the Sengulam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cotton Pygmy-goose | *Nettapus coromandelianus* | Anatidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 4 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 5 | Bronze-winged Jacana | *Metopidius indicus* | Jacanidae | Least Concern |
| 6 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 7 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 8 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 9 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

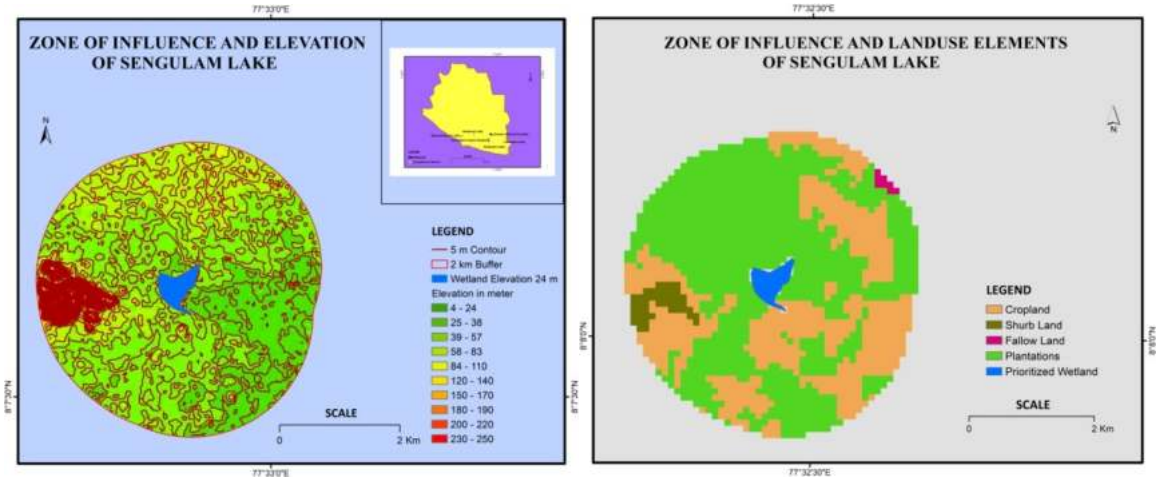
Table 10.8h: list of Mammals recorded along the Sengulam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map10.6: Comparative Google imagery for Sengulam Lake**




**Map10.7: Zone of influence for Sengulam Lake.**



**Suchindram Kulam Complex**

Suchindram kulam complex is rich in flora and fauna. It houses a huge variety of aquatic vegetation like lotus, water lily, floating hearts, pistia and other water plants. The sanctuary is often visited by many migratory water birds like painted stork and spot billed pelicans. Suchindramkulam complex along with the Theeror wetland was identified as a bird sanctuary since 2002**.** The process is still underway, while the wetlands were identified for the plant and bird diversity along with its year round retention of water.

**Lake Survey Number: 7**.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Suchindram kulam complex(Plate 26) also known as Sumantha kulam.
1.2 Villages that surround the wetland include Suchindram.
1.3 & 1.4 The lake is based in Kanyakumari District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 08° 09'38.8" N; 08° 09'32.3" N; 8° 09'19.9" N; 8° 09'08.0" N; 8° 08'35.5"N and Longitude: 077°27'12.7" E; 077°27'14.5" E; 077°27'19.5" E; 077°27'25.0" E; 077°27'19.7" E;
1.6 The wetland is not a Protected Area but the forest department has constructed awareness centers.
1.7 The wetland comes under the jurisdiction of PWD, Kanyakumari division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 96.6 hectares (Map 10.9).
2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category permanent lakes.
2.3 Based on the secondary information the average depth is 3 meters for the wetland.
2.4 The elevation of the wetland is 8 to 19 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and the indirect connection with the Pachiparai River.
   b) The water in the wetland is of permanent nature.
   c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.
   d) The pH of the water was 7.5.
   e) The lake has fresh water as the salinity was 0.389 ppt.
   f) The wetland had the aquatic vegetation like *Ipomoea, Prosopis, Eichornea* and other weeds that dominated the landscape.
2.6 Climatic setting
   a) Rainfallfor the month of January, 2018 in Kanyakumari was 16.6 mm.
   b) The atmospheric temperature was recorded at 29.2 as the water was not present in the wetland.
2.7 The area of zone of influence is 2399.53 hectares with a fixed buffer area of 2 kms around the wetland (Map 10.9).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forests 0%; | Grasslands and shrublands 10 %; |
| Agricultural lands 70 %; | Settlements (rural) 20%; |
| Settlements (Urban) 20%; | Industries 0%. |

2.9. The comparison of the wetland for the years 2003 and 2017 is given in Map 10.8 & 10.9).

**Section III- Biodiversity**

3.1 List of Plant species: 67 species of plants were recorded around the wetland during our visit (Table 10.9).
3.2 List of animal species: 102 animal species including 2 domestic species were recorded during the survey (Table 10.10a-h)

3.3 Species of Conservation importance: One Threatened species of bird and one threatened fish species were observed during the survey (Table 10.10a-h)

3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides drinking water from the borewell water and Pechipari dam as well as form the Tambraparani river at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The are few farmlands where agriculture is undertaken around the wetland using the wetland water.

4.3 Commercial Fishery is undertaken on annual contract basis obtained form the PWD.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for recreation and serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is runoff form the surrounding area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing throught he wetland.

4.11 The site is majorly used by the locals for grazing their cattle and goats.

4.12 There is agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle and sheep is undertaken.

5.5 There is withdrawal of water for agriculture purpose.

5.6 The locals are well aware of the importance of the wetland however the encroachment still continues.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The wetland has been facing severe encroachment problems.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form encroachment that gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Suchindramkulam Lake**


Collar N.J., Andreev A.V., Chan S., Crosby M.J., Subramanya S., Tobias J. A., Rudyanto and Crosby M.J. (2001) Spot-billed pelican (*Pelecanus philippensis*) Threatened birds of Asia, Birdlife International (2001) Threatened birds of Asia: the Birdlife International Red Data Book. Cambridge, UK: Birdlife International, Page 68-103, ISBN 0 946888 442.

Kannan V. and Ranjit Manakadan. (2005) The status and distribution of Spot-billed Pelican *Pelecanus philippensis* in Southern India. *Forktail*. 2: 9–14.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S.(2004) Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Ramarajan S., Murugesan and Saravana Gandhi A. (2015) Biodiversity of Aquatic Macrophytes in Suchindram Theroor Birds sanctuary, Kanniyakumari District, Tamil Nadu, India. Indian Forester, 141(10): 1046-1049, 2015, ISSN No. 0019-4816.

Sridharan N., Somasundaram S., Thiyakesan K. and Lalitha Vijayan. (2011) Status of Wetland Birds in Kanniyakumari, Thanjavur, Cuddalore and Nagapattinam Districts of Tamil Nadu, India. The Indian Forester Page 1177-1182.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532.


Table 10.9: List of Plant species recorded along the Suchindram Kulam Complex

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Capparis grandiflora* | Large-Petal Caper | Thorattimul | Capparaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Ceiba pentandra* | Kapok, Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 5 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 6 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 7 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 8 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 9 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 10 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 11 | *Albizia lebbeck* | Women's tongue | Siridam | Fabaceae | Native | NA |
| 12 | *Canavalia cathartica* | Wild Sword Bean | Segapputampattai, Valavaraik-kay | Fabaceae | Native | NA |
| 13 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 14 | *Crotalaria pallida* | Smooth Rattlepod | --- | Fabaceae | Native | NA |
| 15 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 16 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 17 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 18 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 19 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 20 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 21 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 22 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 24 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 25 | *Zaleya decandra* | Many Stamen Horse Pursland | Charanai | Aizoaceae | Native | NA |
| 26 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 27 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 28 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 29 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 30 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 31 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 32 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 33 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 34 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 35 | *Ipomoea sagittifolia* | Purple Heart Glory | Mancikai, Manjikam, Naruntali | Convolvulaceae | Native | NA |
| 36 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 37 | *Solanum nigrum* | Black nightshade,Blackberrynightshade,Nightshade,Poison berry | Manathakkali | Solanaceae | Native | NA |
| 38 | *Pedalium murex* | Large caltrops | Yanainerunji,Perunerunji | Pedaliaceae | Native | NA |
| 39 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 40 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 41 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 42 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 43 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 44 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 45 | *Mirabilis jalapa* | Four O'Clock, Beauty of the Night | Pattarasu, AndhiMandarai | Nyctaginaceae | Naturalized | NA |
| 46 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 47 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 48 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 49 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | Makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 50 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 51 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 52 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 53 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 54 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 55 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 56 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 57 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 58 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 59 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 60 | *Pistia stratiotes* | Water cabbage, Nile cabbage,water lettuce | Agasatamarai,Agayattamarai | Araceae | Native | LC |
| 61 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 62 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 63 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 64 | *Digitaria ciliaris* | Wild Crabgrass | | Poaceae | Native | NA |
| 65 | *Echinochloa crus-galli* | Barnyard Grass | | Poaceae | Native | LC |
| 66 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 67 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.10a: List of Insects recorded along the Suchindram Kulam Complex

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Grasshopper species | *Spathosternum prasiniferum* | Acrididae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |

| | | | |
|---|---|---|---|
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 10.10b: List of Butterflies recorded along the Suchindram Kulam Complex

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 5 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 8 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 9 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 10 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 11 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 12 | Long-Banded Silverline | *Spindasis lohita* | Aphnaeinae | Common |
| 13 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 14 | Zebra Blue | *Leptotes plinius* | Polyommatinae | Common |
| 15 | Common Pierrot | *Castalius rosimon* | Polyommatinae | Common |
| 16 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 17 | Tiny Grass Blue | *Zizula hylax* | Polyommatinae | Common |
| 18 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 19 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 20 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 21 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 22 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 23 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 24 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 25 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 10.10c: List of Dragonflies recorded along the Suchindram Kulam Complex

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 10.10d: List of Arachnida recorded along the Suchindram Kulam Complex

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 10.10e: List of fishes recorded form the Suchindram Kulam Complex

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 9 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 13 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 14 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 15 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 16 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

Table 10.10f: List of Reptile recorded along the Suchindram Kulam Complex

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 10.10g: List of Birds recorded along the Suchindram Kulam Complex

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 4 | Yellow Bittern | *Ixobrychus sinensis* | Ardeidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 10 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 11 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 12 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 13 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 14 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 15 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 16 | Booted Eagle | *Hieraaetuspen natus* | Accipitridae | Least Concern |
| 17 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 18 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 19 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 20 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 21 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 22 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 23 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 24 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 25 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 26 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 27 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 28 | Black-capped Kingfisher | *Halcyon pileata* | Alcedinidae | Least Concern |
| 29 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 30 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 31 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 32 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 33 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 34 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 35 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 36 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 37 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 38 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 39 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 40 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 41 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 10.10h: List of Mammals recorded along the Suchindram Kulam Complex

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |

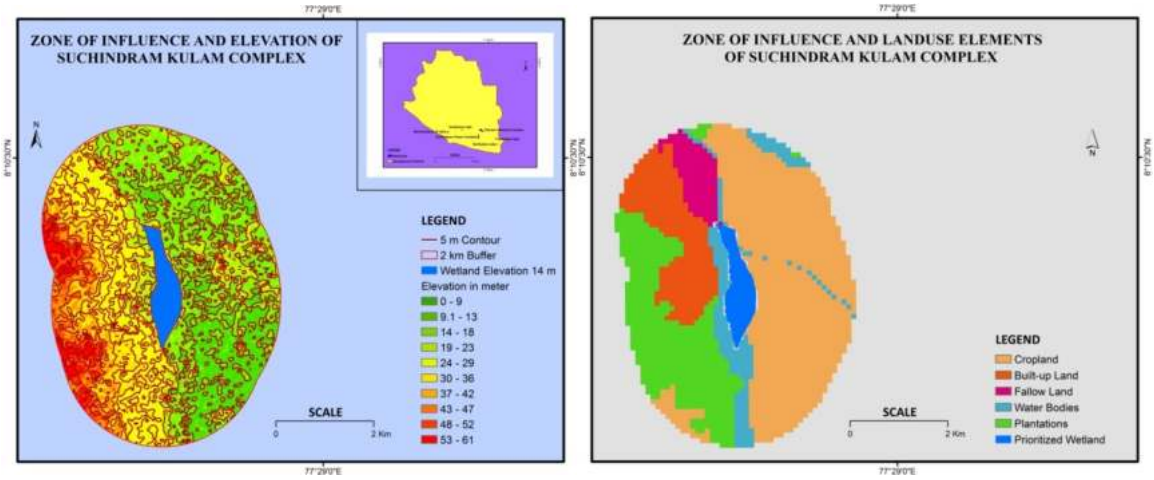
**Map 10.8: Comparative Google imagery for Suchindram Kulam Complex**







**Map 10.9: The zone of influence around the Suchindram Kulam Complex.**



**Theroor Wetland Complex**

Theroor Wetland Complex is in Thovala, KanniyakumariDistrict. Suchindramkulam along with the Theeror wetland was identified as a bird sanctuary since 2002**.** The process is still underway, while the wetlands were identified for the plant and bird diversity along with its year round retention of water.

Lake Survey Number: 895/1,897/1,914.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Theroor wetland complex (Plate 27).

1.2 Villages that surround the wetland include Therur, puthugramam, Uthirpatty, Balakrishnanpudur, Kulasekaran-pudur, Thandanayakankoram, Sadayankulam, Mangalam, Kannanpathy.

1.3 & 1.4 The lake is based in Kanyakumari District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 10'35.9" N; 08° 10'35.9" N; 08° 10'43.1" N; 08° 10'52.3" N; 08° 11'13.1" N; 08° 10'53.6" N; 08° 10'32.0" N; 08° 10'29.6" N; 08° 10'25.7" N; and Longitude: 077° 27'59.0" E; 077° 27'53.6" E; 077° 27'39.4" E; 077° 27'24.4" E; 077° 27'24.4" E; 077° 28'00.9" E; 077° 28'02.5" E; 077° 28'16.0" E; 077° 28'38.4" E; 077° 28'57.1" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of Town Panchayat Union Lake Tamil Nadu Forest Department.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 163 hectares (Map 10.10).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lake.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 11 to 26 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of permanent nature.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was 7.55.
e) The lake has fresh water as the salinity was 0.389 ppt.
f) The wetland was observed to have maximum terrestrial vegetation along with the aquatic vegetation.

2.6 Climatic setting

a) Rainfallfor the month of December in Kanyakumari was 32.1 mm.
b) The atmospheric temperature was between 28.5 and 29.3°C

2.7 The area of zone of influence is 2718.33 hectares with a fixed buffer area of 2 kms around the wetland (Map 10.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0% | Agriculture 75% |
| Grassland & Shrubland 5 % | Settlements (Rural) 20% |
| Settlements (Urban) 0% | Industries 0% |

2.9. The comparison of the wetland for the years 2003 and 2017 is given inMap10.10& 10.11).

**Section III- Biodiversity**

3.1 List of Plant species: 54 species of plants were recorded around the wetland during our visit (Table 10.11).

3.2 List of animal species: 92 animal species including 2 domestic species were recorded during the survey (Table 10.12a-h)

3.3 Species of Conservation importance: Two near threatened birds and fish were observed during the survey (Table 10.12a-h)

3.4 Major Plant invasive alien species and extent of invasion: 10 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornia crassipes, Microcystis* and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that wasrecorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The village has open dug wells and borewells for their regular needs. The municipality also provides water through the borewells.

4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.

4.3 Fishery is undertaken with permission in the lake, a tender system is followed.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetlands recives some population of nature enthusiast as tourist to the bird sanctuary.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments..

4.10 The wetland does have some temples religious institutions along its bank, a few cultural activities are organizedaround the wetland.

4.11 The wetland is used by locals for agriculture and extraction of water only.

4.12 There are agriculture and plantation activities within the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a diversity of fishery although the commercial fishery is not practiced.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken. But tenders are given out on annual basis.

5.2 There is agriculture undertaken within the wetlands.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of ground water for agriculture as the agriculture is practiced within the wetland.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does show major change in the pattern of water inflow and outflow.

6.2 There is organized fishing activity.

6.3 There are few invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not protected and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form encroachment.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Solid waste dumping and rampant agriculture should be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Theroor Lake


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Kannan V. and Ranjit Manakadan. (2005) The status and distribution of Spot-billed Pelican *Pelecanus philippensis* in Southern India. *Forktail*. 2: 9–14.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S.(2004)Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Ramarajan S., Murugesan and Saravana Gandhi A. (2015) Biodiversity of Aquatic Macrophytes in Suchindram Theroor Birds sanctuary, Kanniyakumari District, Tamil Nadu, India. Indian Forester, 141 (10): 1046-1049, 2015, ISSN No. 0019-4816.

Selvamony Sukumaran. and Solomon Jeeva. (2011) Angiosperm flora form wetlands of Kanniyakumari district, Tamilnadu, India. Check List Vol. 7, Issue 4, 2011; Page 486-495, ISSN 1809-127X.

Sridharan N., Somasundaram S., Thiyakesan K. and Lalitha Vijayan. (2011) Status of Wetland Birds in Kanniyakumari, Thanjavur, Cuddalore and Nagapattinam Districts of Tamil Nadu, India. The Indian Forester Page 1177-1182.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 10.11: List of Plant species recorded along the TheroorWetland Complex

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 3 | *Capparis grandis* | Tree Caper, Grand Caper | Thottimaram | Capparaceae | Native | NA |
| 4 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 5 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 6 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 7 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 11 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 12 | *Albizia saman* | Rain Tree | Thoongumoonjimaram | Fabaceae | Exotic | NA |
| 13 | *Alysicarpus ovalifolius* | Alyce clover | | Fabaceae | Native | NA |
| 14 | *Caesalpinia pulcherrima* | Peacock Flower, Pride of Barbados, Dwarf poinciana | Mayurkonrai | Fabaceae | Native | |
| 15 | *Canavalia cathartica* | Wild Sword Bean | Segapputampattai, Valavaraik-kay | Fabaceae | Native | NA |
| 16 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 17 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 18 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 19 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 20 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 21 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 22 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 23 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 24 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 25 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 26 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 27 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 28 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 29 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 30 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 31 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 32 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 33 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 34 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 35 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 36 | *Blepharis maderaspatensis* | Creeping Blepharis | NaalilaiNaagam | Acanthaceae | Native | NA |
| 37 | *Dicliptera cuneata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 38 | *Justicia tranquebariensis* | Tarangambadi Justicia | PunnakuPoodu, Mutaliyar, Narimurunkai, Narimurunkaicceti, Niyakkiyam | Acanthaceae | Native | |
| 39 | *Stachytarpheta jamaicensis* | Blue Porterweed | SeemaiNayuruvi | Verbenaceae | Native | NA |
| 40 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 41 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 42 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 43 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 44 | *Jatropha curcas* | Psychic Nut | Kaattuamanakku, Katukottai | Euphorbiaceae | Invasive | NA |
| 45 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 46 | *Hydrilla verticillata* | Water Thyme, hydrilla | Amiranappaci, Cikavalakam, Cimpaka | Hydrocharitaceae | Native | LC |
| 47 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 48 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 49 | *Pistia stratiotes* | Water cabbage, Nile cabbage,Tropicalduckweed,water lettuce | Agasatamarai,Agayattamarai | Araceae | Native | LC |
| 50 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 51 | *Echinochloacolona* | Jungle Rice, Shama Millet | | Poaceae | Native | LC |
| 52 | *Eleusine indica* | Indian crowfoot grass,Indian goose grass,Wiregrass | Thipparagi, Keveru | Poaceae | Native | LC |
| 53 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 54 | *Azolla caroliniana* | Mosquito fern,Water velvet | | Salviniaceae | Introduced | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.12a: List of Insects recorded along theTheroorWetland Complex

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Praying Mantis | *Mantidae sp.* | Mantodae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 1012b: List of Butterflies recorded along the Theroor Wetland Complex

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 6 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 7 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 8 | Long-Banded Silverline | *Spindasis lohita* | Aphnaeinae | Common |
| 9 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 10 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 11 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 12 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 13 | Striped Tiger | *Danaus genutia* | Danainae | Common |

| | | | | |
|---|---|---|---|---|
| 14 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 15 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 16 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 17 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 18 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 19 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 10.12c: List of Dragonflies recorded along the Theroor Wetland Complex

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 5 | Trumpet Tail | *Acisoma panorpoides* | Libellulidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 8 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 9 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 10 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 11 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 10.12d: List of Arachnida recorded along the Theroor Wetland Complex

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 10.12e: List of fishes recorded form the Theroor Wetland Complex

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 9 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 10 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 11 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 12 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 13 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 14 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 15 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 16 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 17 | *Anabas testudineus* | Climbing erch | Panangottaimeen, Payonerikendaimeen | Anabantidae | DD |
| 18 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.12f: List of Reptile recorded along the Theroor Wetland Complex

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 10.12g: List of Birds recorded along the Theroor Wetland Complex

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Yellow Bittern | *Ixobrychus sinensis* | Ardeidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 8 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |

| | | | | |
|---|---|---|---|---|
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 11 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 12 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 13 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 14 | Bronze-winged Jacana | *Metopidius indicus* | Jacanidae | Least Concern |
| 15 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 16 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 17 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 18 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 19 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 20 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 21 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 22 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 23 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 24 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 25 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 26 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 27 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 28 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 29 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 30 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 31 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 32 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 33 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

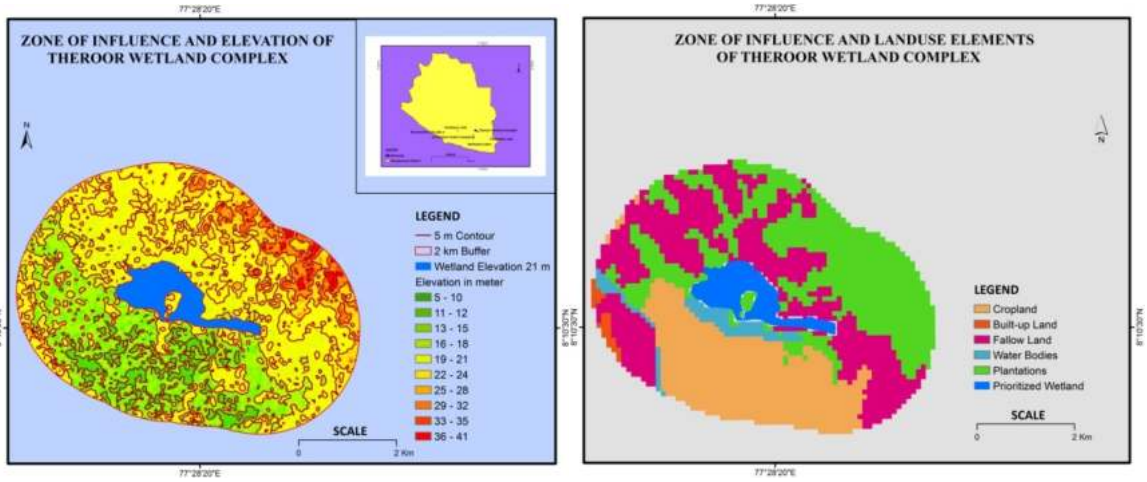
Table 10.12h: List of Mammals recorded along theTheroor Wetland Complex

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 10.10: Comparative Google imagery for Theroor Wetland Complex**




**Map 10.11: The zone of influence around the Theroor Wetland Complex**



**Vembanur Lake**

Vembanoorkulam,Surrounded by Majestic Hills and fringed with coconut trees and paddy fields, located in Kanyakumari district at the southern tip of Tamil Nadu.surface area of the lake was covered in floating and rooted vegetation including lotus Nelumbiumspeciosum, water lily *Nymphaea* lotus and *Limnanthemum*. The water level of the lake, and hence the area and density of the aquatic vegetation, was influenced both by rainfall and by artificial control using sluice gates to let out water for irrigation.

**Lake Survey number**: 510

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Vembanur lake and Vembanurkulam (Plate 27).
1.2 Villages that surround the wetland include Vembanur, Perumselvavillai, Aasaripallam andThoppupillai.
1.3 & 1.4 The lake is based in Kanyakumari District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 08° 10'46.8" N; 08° 10'47.2" N; and Longitude: 077° 22'27.4" E; 077° 22'21.9" E;
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD Kanyakumari division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 20 hectares (Map 10.12).
2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.
2.3 Based on the secondary information the average depth is 3.0 meters for the wetland.
2.4 The elevation of the wetland is 19 to 20 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area and form the Ananthanar River.
   b) The water in the wetland is mostly of intermittent nature with very little water available through out the year, the wetland is mostly dependant on the rainfall and runoff waters.
   c) The water also helps in replenishing the groundwater.
   d) The pH of the water was 6.7.
   e) The lake has fresh water as the salinity recorded was 0.174 ppt.
   f) The wetland was observed to have maximum terrestrial vegetation along with the aquatic vegetation. Moreover the forest department has permitted the locals to undertake agriculture activities to control the spread of invasives. The wetland was mesotrophic.
2.6 Climatic setting
   a) Rainfallfor the month of December in Kanyakumari was 32.1 mm.
   b) The atmospheric temperature was 29.5 °C.
2.7 The area of zone of influence is 1681.5 hectares with a fixed buffer area of 2 kms around the wetland (Map 10.13).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland and Shrub land 10%; |
| Agriculture 70%; | Settlements (Rural) 20%; |
| Settlements (Urban) 0%; | Industries 0%. |

2.9. The comparison of the wetland for the years 2005 and 2017 is given in Map 10.12 & 10.13.

**Section III- Biodiversity**

3.1 List of Plant species: 65 species of plants were recorded around the wetland during our visit (Table 10.7).
3.2 List of animal species:54 animal species including 2 domestic species were recorded during the survey (Table 10.8a-h)

3.3 Species of Conservation importance : One near Threatened specie of bird and fish each were observed during the survey (Table 10.8a-h)

3.4 Major Plant invasive alien species and extent of invasion:Eight invasive plants including *Parthenium hysterophorus*, *Eichorniea carssipes* and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The municipal corporation provides the borewell water to fulfill the daily needs.

4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.

4.3 Fishery is undertaken without any permission in the lake, recreational fishery is also practiced whenever water is available.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland does have several temples and other religious institutions along its bank, and cultural activity is organized around the wetland.

4.11 The wetland is used by locals for agriculture and extraction of water only.

4.12 There are agriculture or plantation activities within the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.

4.14 The wetland supports a diversity of fishery although the commercial fishery is not practiced.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of ground water for agriculture as the agriculture is practiced within the wetland.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.

6.3 There is no organized fishing activity.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland has some amount of solid waste dumping and encroachment activities. The siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

The wetland is not protected under any official instruments and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chandl should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Vembanur Lake


Collar N.J., Andreev A.V., Chan S., Subramanya S., Tobias J. A., Rudyanto.and Crosby M.J. (2001) Spot-billed pelican (*Pelecanus philippensis*) Threatened birds of Asia, Birdlife International (2001) Threatened birds of Asia: the Birdlife International Red Data Book. Cambridge, UK: Birdlife International, Page 68-103, ISBN 0 946888 442.

Kannan V. and Ranjit Manakadan. (2005) The status and distribution of Spot-billed Pelican *Pelecanus philippensis* in Southern India. *Forktail*. 2: 9–14.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S.(2004) Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Priyatharsini P. and Dhanalakshmi B. (2016) Water Quality Characteristics of Vembanoor Wetland, Kanniyakumari District, Tamil Nadu, India. *Int.J.Curr.Microbiol.App.Sci*. 5(8): 852- 861. doi: http://dx.doi.org/10.20546/ijcmas.2016.508.096

Sridharan N., Somasundaram S., Thiyakesan, K. and Lalitha Vijayan. (2011) Status of Wetland Birds in Kanniyakumari, Thanjavur, Cuddalore and Nagapattinam Districts of Tamil Nadu, India. The Indian Forester Page 1177-1182.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 10.13: List of Plant species recorded along the Vembanur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 2 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 5 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 6 | *Crotalaria globosa* | Spherical Rattlepod | | Fabaceae | Native | |
| 7 | *Indigoferacassioides* | Cassia indigo | | Fabaceae | Native | NA |
| 8 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 9 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 12 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 13 | *Morinda coreia* | Indian Mulberry, Morinda | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 14 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 15 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 16 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 17 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 18 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 19 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 20 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 21 | *Utricularia aurea* | Golden Bladderwort | | Lentibulariaceae | Native | LC |
| 22 | *Tecoma stans* | Yellow bells | Sonnapatti | Bignoniaceae | Exotic | NA |
| 23 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 24 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25 | *Stachytarpheta jamaicensis* | Blue Porterweed | SeemaiNayuruvi | Verbenaceae | Native | NA |
| 26 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 27 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 28 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 29 | *Amaranthus spinosus* | Prickly Amaranth | Mullukkeerai | Amaranthaceae | Exotic | NA |
| 30 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 31 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 32 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 33 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 34 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 35 | *Streblus asper* | Sand paper tree | Kurripila,parayan, kuttippirai | Moraceae | Native | NA |
| 36 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 37 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 38 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 39 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.14a: List of Insects recorded along the Vembanur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 10.14b: List of Butterflies recorded along the Vembanur Lake

| S.No | Common Name | *Scientific Name* | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 5 | Zebra Blue | *Leptotes plinius* | Polyommatinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 8 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 10.14c: List of Dragonflies recorded along the Vembanur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 10.14d: List of Arachnida recorded along the Vembanur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 10.14e: List of fishes recorded form the Vembanur Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |

| | | | | | |
|---|---|---|---|---|---|
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 9 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 10 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 11 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 12 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 10.14f: List of Reptile recorded along the Vembanur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

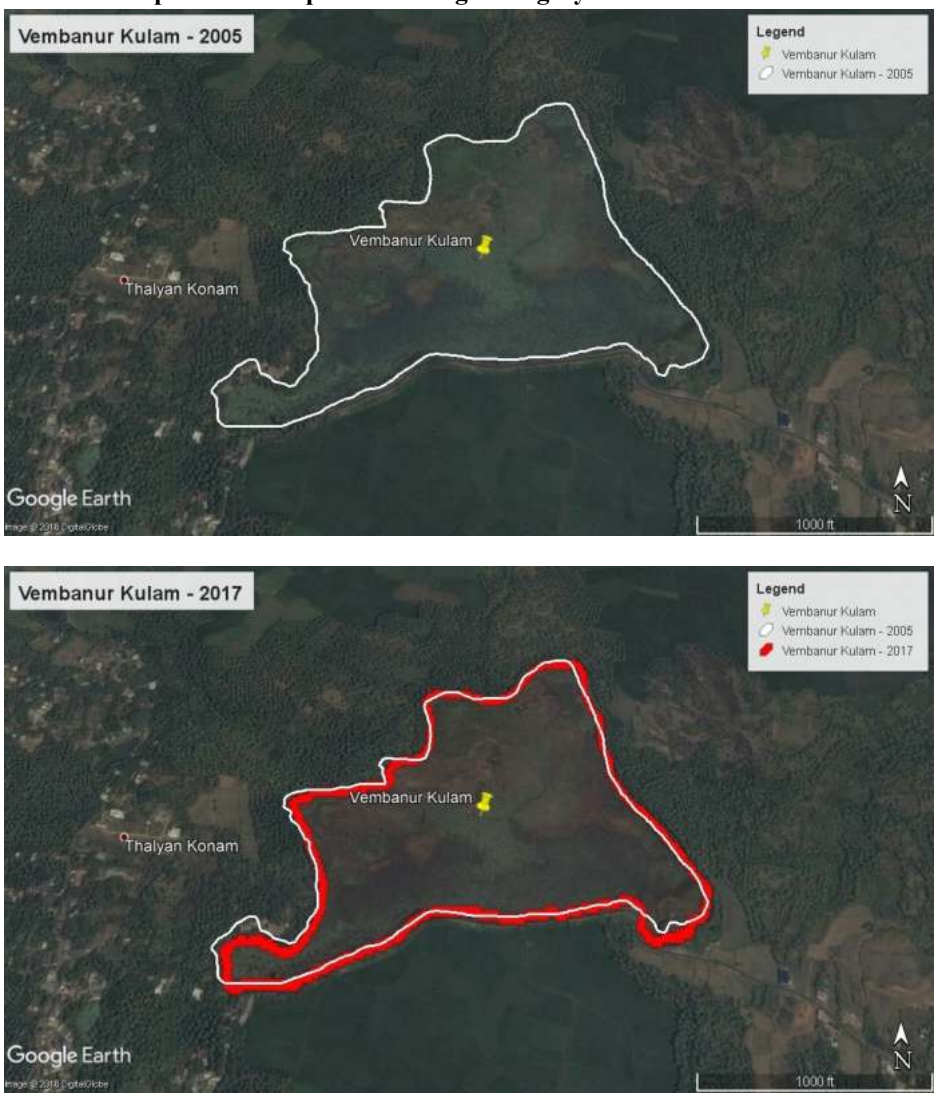
Table 10.14g: List of Birds recorded along the Vembanur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cotton Pygmy-goose | *Nettapus coromandelianus* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 6 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 7 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 10 | Booted Eagle | *Hieraaetuspen natus* | Accipitridae | Least Concern |
| 11 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 12 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 13 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 14 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 15 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 16 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 17 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 18 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 19 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 20 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 21 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 22 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 23 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

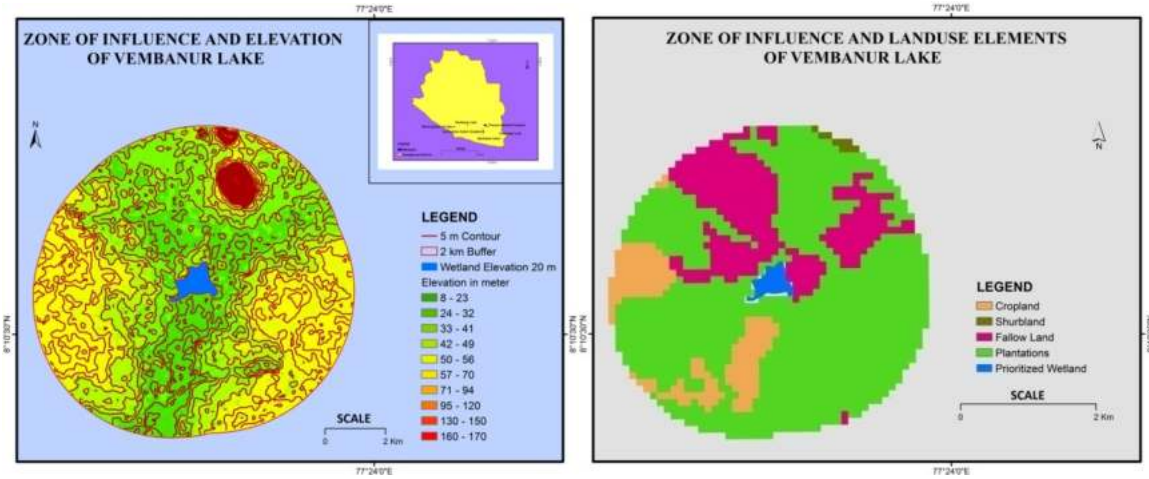
Table 10.14h: List of Mammals recorded along the Vembanur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |

**Map 10.12: Comparative Google imagery for Vembanur Lake**




**Map 10.13: The zone of influence around the VembanurLake**



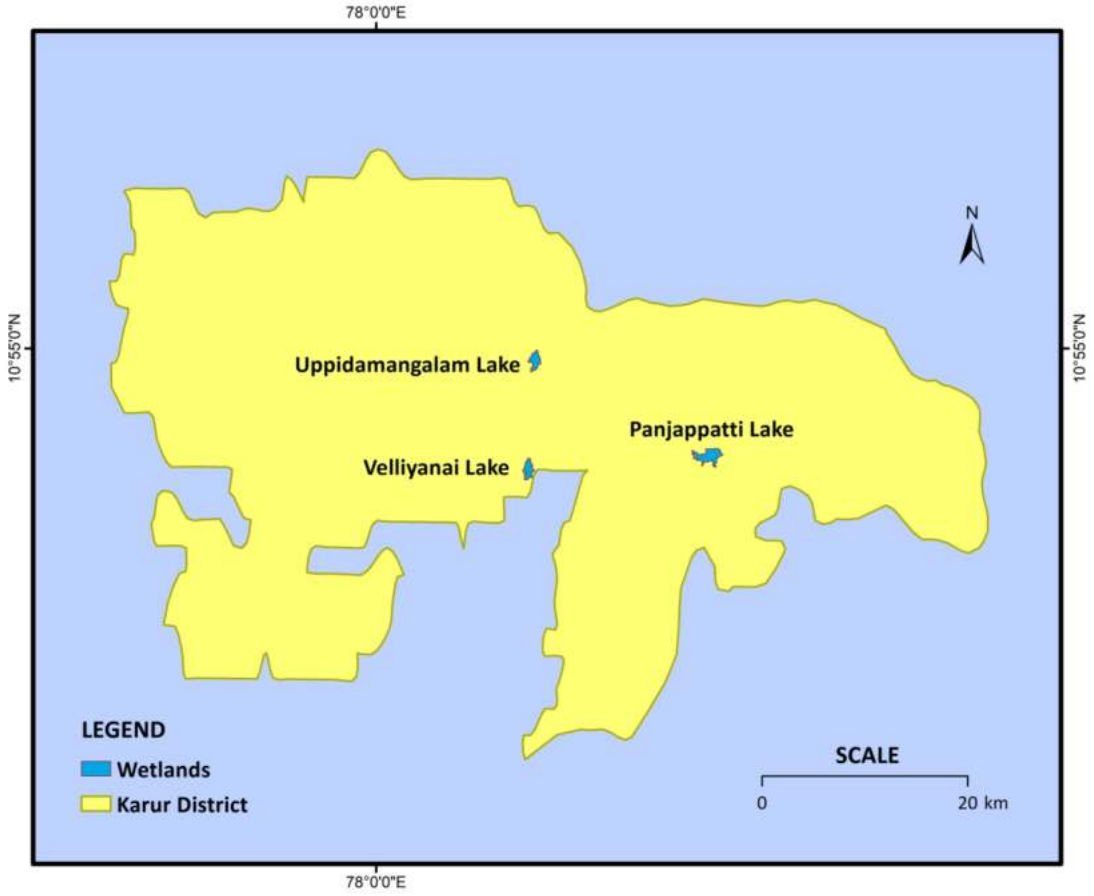
## 11. Karur District

### 1. Introduction

Karur is an ancient city of Tamil Nadu, also an administrative district of the state. It is the most centrally located district of Tamil Nadu. The district is bounded by Namakkal District in the north, the Dindigul District in the south, the Tiruchirappalli District on the east and Erode District on the west. The district is famous for its cottage industries. It belongs to Kongu Nadu Region. Karur is one of the oldest towns in Tamil Nadu. In the ancient and medieval times, the area was ruled by the Cheras, Gangas and Cholas. Karur was the capital of Cheras.

Total geographic area of Karur is 2895.57 km². Total area under wetland is 16383 ha, which includes 591 small wetland (<2.25 ha). Major wetland types of the district are River/Stream (11096 ha), Tanks/ponds (2166 ha), and Lakes/ponds (2068 ha).

The three wetlands selected in the district were based on the satellite imagery and the decadel changes observed.




**Map 11.1: Wetlands of KarurDistrictAssessed for Prioritization**

### Observations

Among the three wetlands selected in the district, Panjapatti is the largest while Velliyanai is the smaller of the three wetlands. Around the three wetlands, we recorded 50 plant species both aquatic and terrestrial including 8 invasive species (Table 11.1). The faunal components totaled 39 species with the representation of 19 bird species of

including the wetland dependant birds. The field study revealed all the thre wetlands were dry however based on the vegetation available we could determine the trophic status of only Panjapatti lake which was eutrophic (Table 11.2). Based on the soil characteristics i.e. soil colour and the lesser elements we found all the three wetlands to still retain the hydric characteristics.

The wetlands were observed to provide the ecosystem services like ground water recharge, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species. Mining of lake sediments was a major threat to all the three wetlands influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Uppidamangalam Lake
2. Velliyanai Lake
3. Panjappatti Lake

Table 11.1: The flora and fauna recorded form the wetlands of Karur District

| S. No | Name of the Wetland | Plants Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Panjappatti Lake | 34(5) | 4 | 3 | 5 | 1 | 0 | 0 | 1 | 16 | 4 |
| 2 | Uppidamangalam Lake | 11(3) | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 6 | 0 |
| 3 | Velliyanai Lake | 25(5) | 4 | 2 | 4 | 0 | 0 | 0 | 1 | 5 | 2 |
| | Total | 50(8) | 6 | 3 | 5 | 1 | 0 | 0 | 1 | 19 | 4 |

Table 11.2: The water and soil quality assessed form the wetlands of Karur District

| **District Name** | Karur | | |
|---|---|---|---|
| **Wetland Name** | Panjappatti Lake | Uppidamangalam Lake | Velliyanai Lake |
| **Buffer Area in Hectare (ha)** | 2983.37 | 2341.06 | 2323.4 |
| **Air Temperature °C** | 32.1 | 38 | 33.7 |
| **Water Temperature °C** | | | |
| **Humidity %** | 32 | 42 | 48 |
| **Nutrients in Water** | Eutrophic | not known | not known |
| **Water pH** | | | |
| **Water TDS ppm** | | | |
| **Water Conductivity ppm** | | | |
| **Light Penetration cms** | | | |
| **Water Salinity ppt** | | | |
| **DO mg/L** | | | |
| **PO4P mg/L** | | | |
| **Water Na ppm** | | | |
| **Water K ppm** | | | |
| **Water Li ppm** | | | |
| **Water Ca ppm** | | | |
| **Soil Colour code** | 10YR 5/6 | 7.5YR 5/6 | 2.5YR 5/4 |
| **Soil Colour** | Yellowish Brown | Strong Brown | Reddish Brown |
| **Soil pH** | 7.8 | 7.71 | 7.64 |
| **Soil TDS ppm** | 210 | 91.6 | 147 |
| **Soil Conductivity ppm** | 358 | 128.8 | 205 |
| **Soil Salinity ppt** | 0.128 | 0.065 | 0.101 |
| **Soil Na ppm** | 5.7 | 1.8 | 5.7 |
| **Soil K ppm** | 10.9 | 3.6 | 5.8 |
| **Soil Li ppm** | 0 | 0.1 | 0.1 |
| **Soil Ca ppm** | 1.9 | 9.8 | 18.9 |

**Panjappatti Lake**

PanjapattiLake, near Panjapatti village is a large rainfed lake that is mostly neglected, and infested by aquatic weeds.

**Lake Survey Number:Not provided**

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Panjappatty Lake (Plate 28).
1.2 Villages that surround the wetland include Panjappatty, Alagapuri, karaikudi, Ponnipatty.
1.3 & 1.4 The lake is based in Karur disttrict of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 10° 49'44.3" N; 10° 49'44.7" N; 10° 49'45.1" N; 10° 49'40.9" N; and Longitude: 078° 17'22.4" E; 078° 17'35.6" E; 078° 17'46.5" E; 078° 18'00.8" E;
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 264 hectares (Map 11.2).
2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent tank.
2.3 Based on the secondary information the average depth is 3 meters for the wetland.
2.4 The elevation of the wetland is 139 to 141 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
   b) The water in the wetland is temporary in nature.
   c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the Cauvery river cannal.
   d) The pH of the water was not recorded, as during the time of our visit the wetland was completely dry
   e) The lake has fresh water as per the secondary information as the lake was dry we did not estimate the salinity
   f) The wetland had aquatic vegetation like *Ipomoea sp.* and was dominated by *Prosopis juliflora*.
2.6 Climatic setting
   a) Rainfallfor the month of February, 2018 in Karur was 0.0 mm.
   b) The atmospheric temperature was 32.1°C and the humidity was 30 %
2.7 The area of zone of influence is 2983.37 hectares with a fixed buffer area of 2 kms around the wetland (Map 11.3).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 15%; |
| Agricultural lands 80%; | Settlements (rural) 5%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2010 and 2017 is given in Map 11.2& 11.3.

**Section III- Biodiversity**

3.1 List of Plant species: 33 species of plants were recorded around the wetland during our visit (Table 11.3).
3.2 List of animal species: 34 animal species including 3 domestic species were recorded during the survey (Table 11.4a-g)
3.3 Species of Conservation importance - Threatened species of birds were not observed during the survey (Table 11.4a-g)
3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The Village Panchayat provides drinking water form the borewell water and the municipality provides the Cauvery water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the Cauvery cannal.
4.3 Fishery is not undertaken as the wetland has onlyfor around 3 months.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it is a water scarse area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage and as toilet.
4.12 There are agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland does not support any local fish species.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure with increasing encroachment and agriculture activities.
6.3 The wetland water quality and the ecological character is changing rapidly.

**Section VII Notification Category**

The wetland is not is a bird sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Panjapatti lake**

There is no published literature available on the wetland.

Table 11.3. List of Plant species recorded along the Panjappatti Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 3 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 4 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 8 | *Cayratiatrifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 9 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 10 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 11 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 14 | *Glinus lotoides* | Lotus Sweetjuice, | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 15 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 16 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 17 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, | Asteraceae | Native | NA |
| 18 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 19 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 20 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo | Paalai | Apocynaceae | Native | LC |
| 21 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 22 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 23 | *Pisonia grandis* | Lettuce Tree | NanjuMurichchan | Nyctaginaceae | Native | NA |
| 24 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 25 | *Celosia argentea* | Plumed cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 26 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 27 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 28 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 29 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 30 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 31 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 32 | *Eragrostis gangetica* | SlimflowerLovegrass | | Poaceae | Native | NA |
| 33 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 11.4a: List of Insects recorded along the Panjappatti Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Antlion | *Myrmeleontidae sp.* | Myrmeleontidae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 11.4b: List of Butterflies recorded along the Panjappatti Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 4 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |

Table 11.4c: List of Dragonflies recorded along the Panjappatti Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 11.4d: List of Arachnida recorded along the Panjappatti Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 11.4e: List of Reptiles recorded along the Panjappatti Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

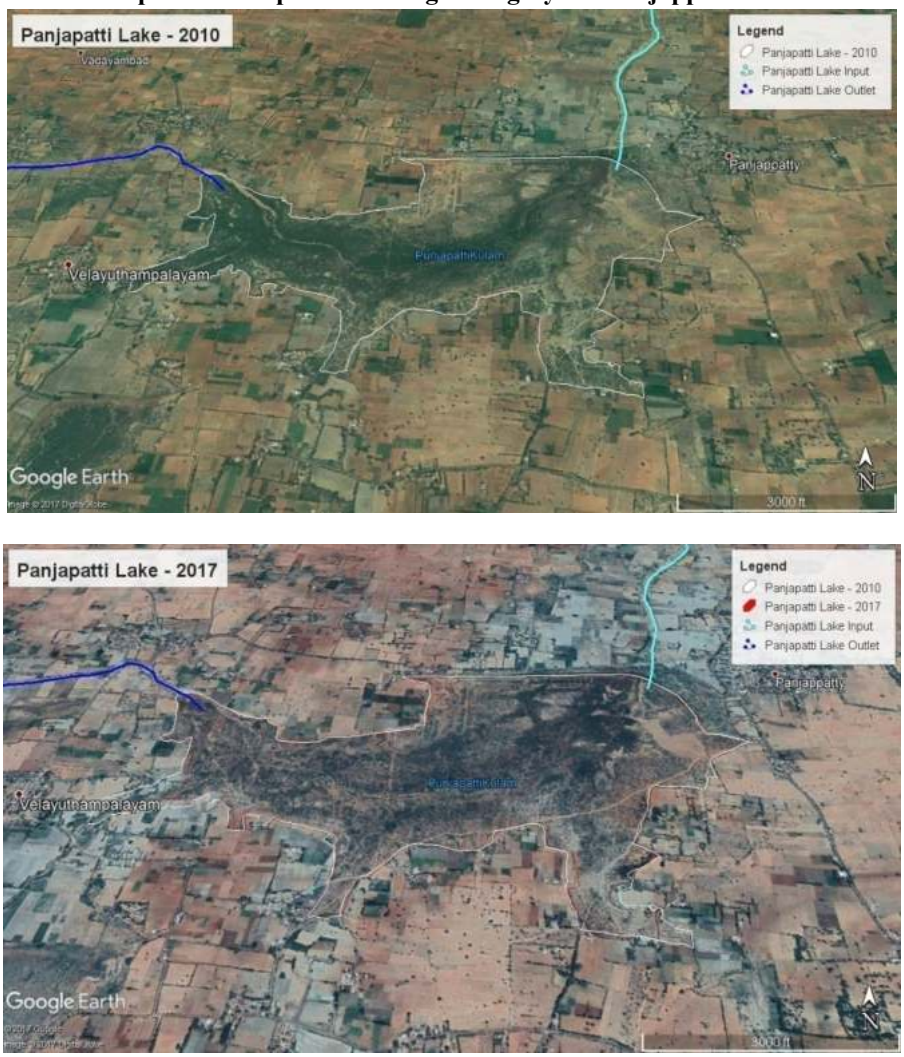
Table 11.4f: List of Birds recorded along the Panjappatti Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 6 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 7 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 8 | Indian Nightjar | *Caprimulgus asiaticus* | Caprimulgidae | Least Concern |
| 9 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 10 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 11 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Rufous-tailed Lark | *Ammomands phoenicura* | Alaudidae | Least Concern |
| 14 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 15 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 16 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

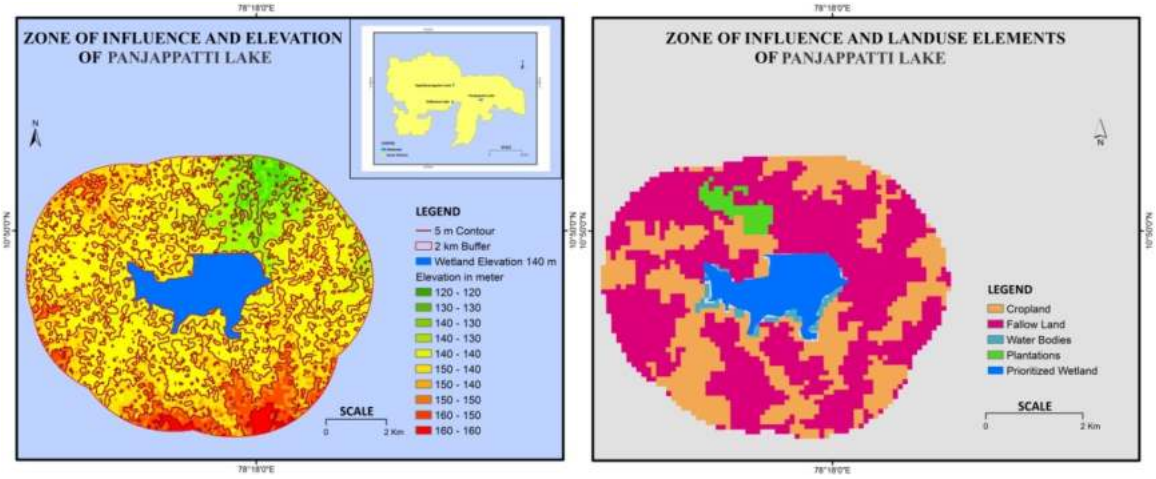
Table 11.4g: List of Mammals recorded along the Panjappatti Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos Taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Common |

**Map 11.2: Comparative Google imagery for Panjappatti Lake**




**Map 11.3: The zone of influence around the Panjappatti Lake.**



**Uppidamangalam Lake**

**Lake Survey Number:** 822 A, B, C, K

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Uppidamangalam Lake (Plate 28).

1.2 Villages that surround the wetland include Sethupatti, Udayagoundanur, Lingathur.

1.3 & 1.4 The lake is based inUppidamangalam taluka in Karur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 54'30.1" N; 10° 54'30.1" N; 10° 54'30.9" N; and Longitude: 078° 08'07.6" E; 078° 08'04.3" E; 078° 07'58.0" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 136 hectares (Map 11.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 1-2 meters for the wetland.

2.4 The elevation of the wetland is 135 to 137 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and Selivelayam pond.

b) The water in the wetland is temporatry in nature.

c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the surrounding wetlands.

d) The pH of the water was not recorded as during the time of our visit the wetland was completely dry.

e) The lake has fresh water as per the secondary information as the lake was dry we did not estimate the salinity

f) The wetland had *Ipomoea lantana, Parthenium, Acacia sp*. and was dominated by *Prosopis juliflora*.

2.6 Climatic setting

a) Rainfallfor the month of February, 2018 in Karur was 0.0 mm.

b) The atmospheric temperature was 38°C and the humidity was 42 %

2.7 The area of zone of influence is 2341.06 hectares with a fixed buffer area of 2 kms around the wetland (Map 11.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018is given inMap 11.4 & 11.5.

**Section III- Biodiversity**

3.1 List of Plant species: Nine species of plants were recorded around the wetland during our visit (Table 11.5).

3.2 List of animal species: 12 animal species were recorded during the survey (Table 11.6a-e)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 11.6a-e)

3.4 Major Plant invasive alien species and extent of invasion: Three invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The Village Panchayat provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the adjoining wetlands.
4.3 Fishery is not undertaken as the wetland has only for around 3 months.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it is a water scarse area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 There are no agriculture or plantation activities within the wetland.
4.12 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.13 The wetland does not support any local fish species.
4.14 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture not undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly.

**Section VII Notification Category**

The wetland is not is a bird sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

No such activities recorded.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available for the lake

Table 11.5: List of plants recorded along the Uppidamangalam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 3 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 4 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 5 | *Pedalium murex* | Large caltrops | Yanainerunji,Perunerunji | Pedaliaceae | Native | NA |
| 6 | *Justicia tranquebariensis* | Tarangambadi Justicia | PunnakuPoodu, Mutaliyar, Narimurunkai, Narimurunkaicceti, Niyakkiyam | Acanthaceae | Native | |
| 7 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 8 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 9 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Defficient, NA -Not Assessed

Table 11.6a: List of Insects recorded along the Uppidamangalam Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Antlion | *Myrmeleontidae sp.* | Myrmeleontidae |

Table 11.6b: List of Butterflies recorded along the Uppidamangalam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |

Table 11.6c: List of Odonates recorded along the Uppidamangalam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

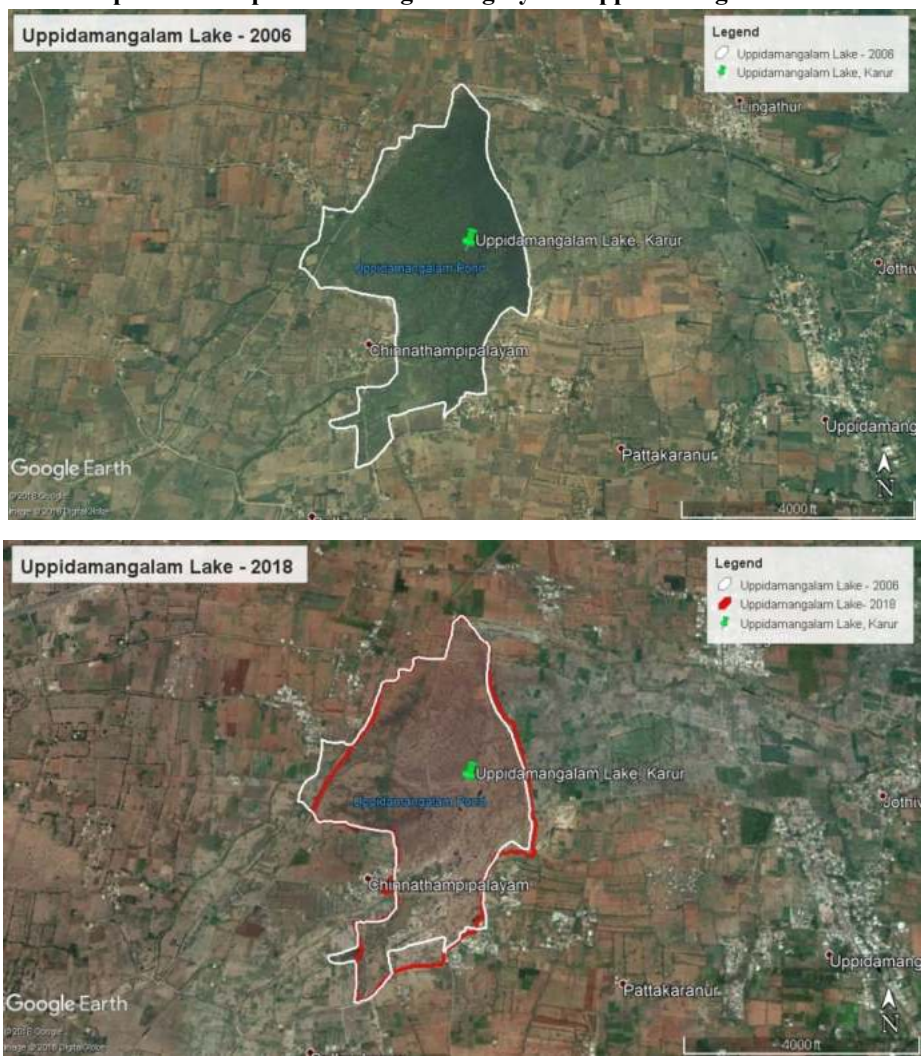
Table 11.6d: List of Reptiles recorded along the Uppidamangalam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

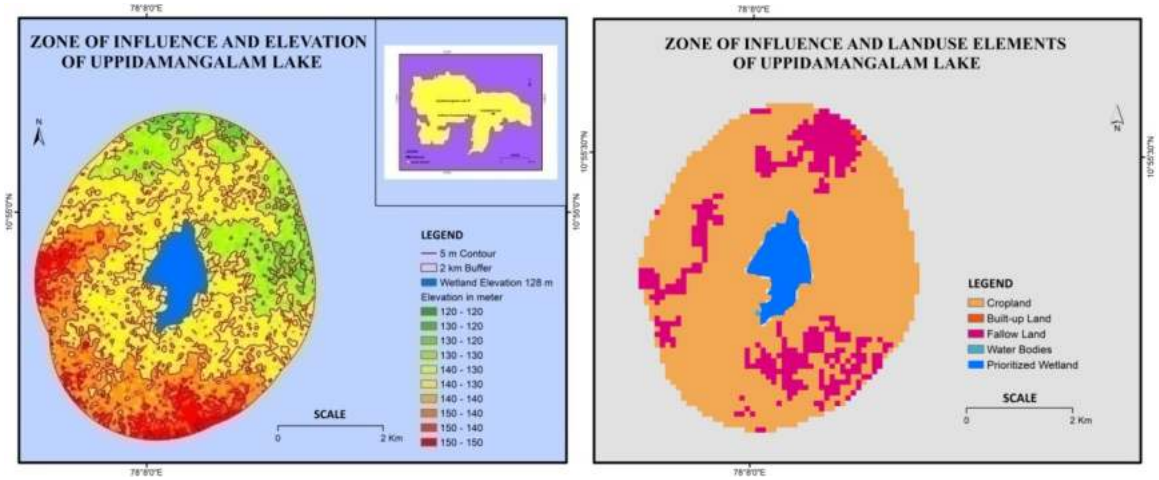
Table 11.6e: List of Birds recorded along the Uppidamangalam Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 3 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 4 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 5 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 6 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

**Map 11.4: Comparative Google imagery for Uppidamangalam Lake**




**Map 11.5: The zone of influence around the Uppidamangalam Lake.**



**Velliyanai Lake**

**Lake Survey Number:**Not Provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Velliyanai Lake (Plate 29) also known as periyakulam.

1.2 Villages that surround the wetland include Gudalur, Nadumettupatti, Vadadukkupatti, Kuttanaickenpatty.

1.3 & 1.4 The lake is based in Uppidamangalam taluka in Karur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 49'04.7" N; 10° 49'05.6" N; 10° 49'03.5" N; and Longitude: 078° 08'05.7" E; 078° 08'01.4" E; 078° 07'57.6" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 131 hectares (Map 11.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 1 -2 meters for the wetland. The wetland is dry for nearly 12 years now.

2.4 The elevation of the wetland is 170 to 171 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and Alagapuri Dam
b) The water in the wetland is temporatry in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the surrounding wetlands.
d) The pH of the water was not recorded as during the time of our visit the wetland was completely dry.
e) The lake has fresh water as per the secondary information as the lake was dry we did not estimate the salinity
f) The wetland had *Ipomoea, Lantana, Parthenium, Acacia sp.* and was dominated by *Prosopis juliflora*.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Karur was 0.0 mm.
b) The atmospheric temperature was 33.7°C and the humidity was 48 %

2.7 The area of zone of influence is 2323.4 hectares with a fixed buffer area of 2 kms around the wetland (Map 11.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 5%; |
| Agricultural lands 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 11.6 & 11.7.

**Section III- Biodiversity**

3.1 List of Plant species:24 species of plants were recorded around the wetland during our visit (Table 11.7).

3.2 List of animal species:14 animal species including 2 domestic species were recorded during the survey (Table 11.8a-f)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 11.8a-f)

3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Prosopis juliflora* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The Village Panchayat provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the adjoining wetlands.
4.3 Fishery is not undertaken as the wetland has only for around 3 months.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it is a water scarse area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 There are no agriculture or plantation activities within the wetland.
4.12 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.13 The wetland does not support any local fish species.
4.14 There was mining for sand or silt undertaken with PWD permission

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture but not undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly.

**Section VII Notification Category**

The wetland is not is a bird sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

No such activities recorded.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published Literature available for Velliyanai Lake

Table 11.7: List of Plants recorded along the Velliyanai Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 3 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllacea e | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 7 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 8 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 9 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 10 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 11 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 14 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 15 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 16 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 17 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 18 | *Heliotropiumellipticum* | Common Heliotrope, Potato weed, European heliotrope, European turn-sole, Caterpillar weed | | Heliotropiacea e | Native | |
| 19 | *Barleria acuminata* | Long-flower Barleria | VellaiKurinji | Acanthaceae | Native | NA |
| 20 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 21 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 22 | *Euphorbia antiquorum* | Triangular Spurge, Square Spurge, Square milk hedge, Fleshy spurge | Chaturakalli, Kalli, Kantiravam, Kodiravam, Tiruvargalli | Euphorbiaceae | Native | |
| 23 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 24 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 11.8a: List of Insects recorded along the Velliyanai Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Cow bug | *Oxyrachistarandus* | Membracidae |
| 2 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 3 | Antlion | *Myrmeleontidae sp.* | Myrmeleontidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 11.8b: List of Butterflies recorded along the Velliyanai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 11.8c: List of Odonates recorded along the Velliyanai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 11.8d: List of Reptiles recorded along the Velliyanai Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 11.8e: List of Birds recorded along the Velliyanai Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Small Buttonquail | *Turnixsylvaticus* | Turnicidae | Least Concern |
| 2 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 3 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 4 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 5 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

Table 11.8f: List of Mammals recorded along the Velliyanai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |

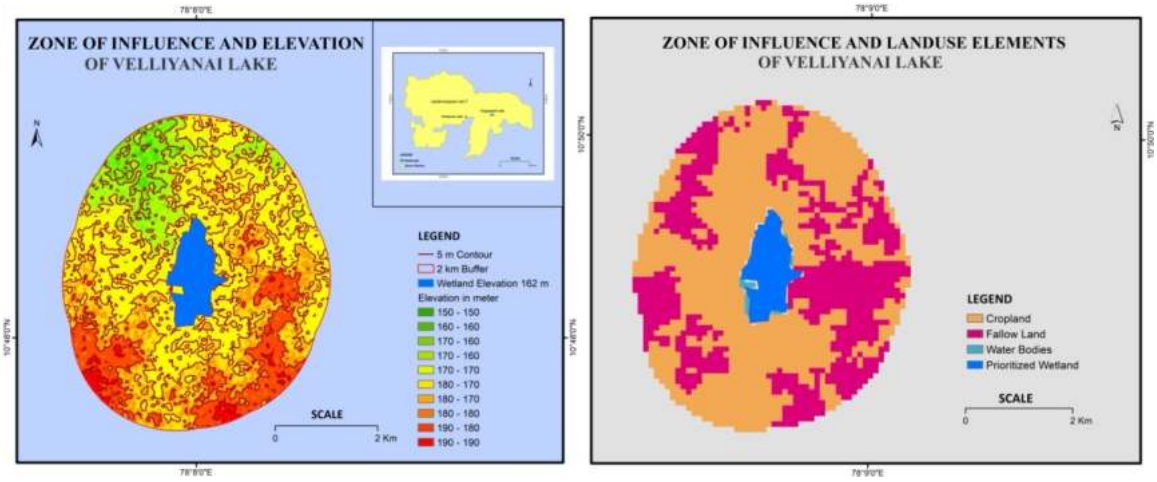
**Map 11.6: Comparative Google imagery for Velliyanai Lake**







**Map 11.7: The zone of influence around the Velliyanai Lake.**



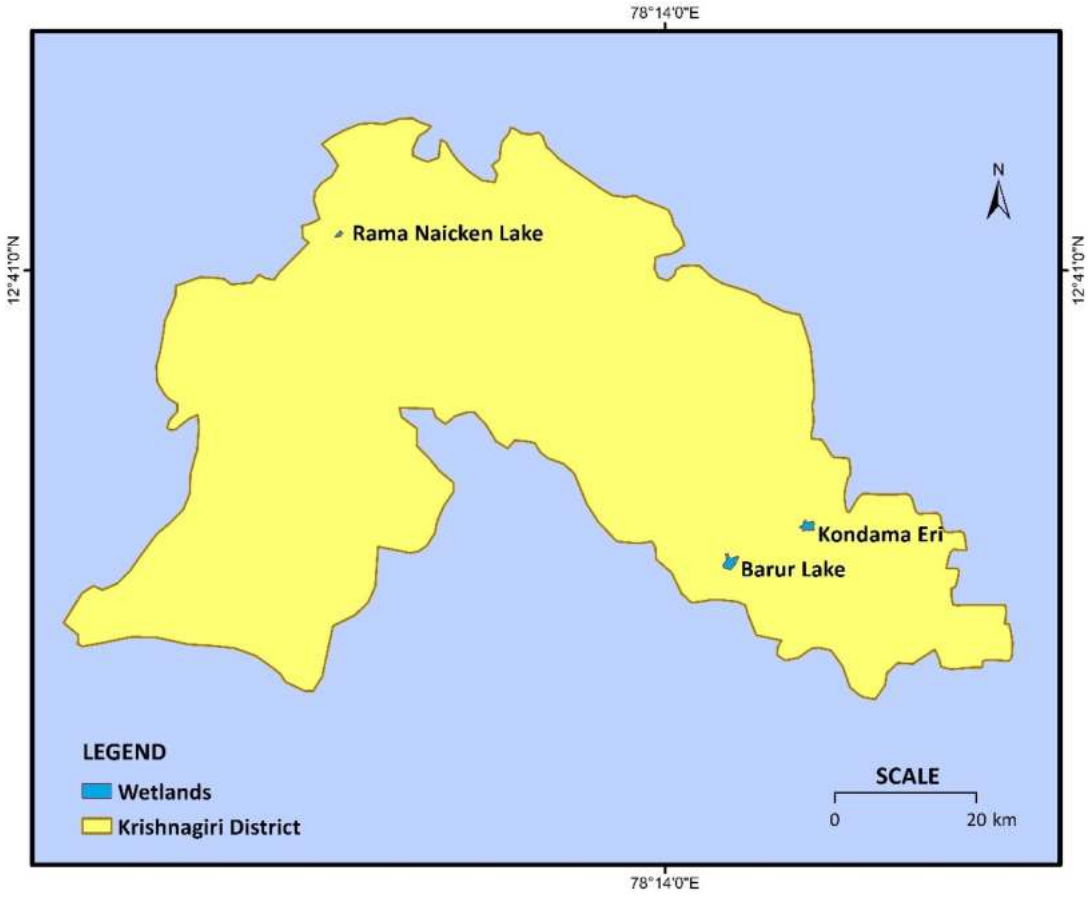
## 12. Krishnagiri district

### 1. Introduction

**Krishnagiri district** is a district in the western part of the state of Tamil Nadu, in India. This district is carved out form Dharmapuri District by 2004. The area contains many granite hillocks, hence the name *Krishnagiri*. History says this area was under the Vijayanagar Empire, and those days it was custom to name a town or a landmark after one of its famous king, Krishnadevarayar.

Krishnagiri district covers an area of 5143 km². Krishnagiri district is bound by Vellore and Thiruvannamalai districts to the east, state of Karnataka to the west, the state of Andhra Pradesh to the north and Dharmapuri District to the south. It has a mountainous terrain. The flatlands are irrigated by the South Pennar River.

SACON during 2004 had prioritized one wetland form Krishnagiri district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected this wetland to assess its present potential for conservation. (Map12.1).The other two wetlands were selected on the basis of the google imagery and the data available on the internet portal.




**Map 12.1: Wetlands of Krishnagiri district assessed for Prioritization**

**Observations**

Of the three wetlands selected in the district, Barur is the largest while RamaNaicken Lake is the smaller of the three wetlands. Around the three wetlands, we recorded 61 plant species both aquatic and terrestrial including 11 invasive species (Table 12.1). The faunal components totaled 102 species with the representation of 43 bird species including the wetland birds. All the three wetlands were Oligotrophic in status (Table 12.2). Barur lake had higher Phosphorus levels and the wetland soil was inaccessible. The soil characteristics in the other two wetlands showed the influence of human related activities.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species and increasing human interference that was maximum in the RamaNaicken Lake. Release of sewage that influences the character of the wetland was more in Barur and Ramanaicken wetlands.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Rama Naicken Lake
2. Kondama Eri
3. Barur Lake

Table 12.1: The flora and fauna recorded form the wetlands of Krishnagiri District

| S. No | Name of the Wetland | Plants | Other Arthropods | Odonata | Lepidoptera | Fishes | Arachnida | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Barur Lake | 40(9) | 7 | 6 | 14 | 12 | 2 | 0 | 2 | 33 | 3 |
| 2 | Kondama Eri | 11(4) | 0 | 3 | 3 | 3 | 0 | 0 | 1 | 22 | 4 |
| 3 | Rama Naicken Lake | 29(4) | 9 | 6 | 10 | 12 | 0 | 0 | 1 | 25 | 4 |
| | Total | 61(11) | 10 | 8 | 20 | 12 | 2 | 0 | 2 | 43 | 5 |

Table 12.2: The water and soil quality assessed form the wetlands of Krishnagiri District

| **District Name** | Krishnagiri | | |
|---|---|---|---|
| **Wetland Name** | BarurLake | Kondama Eri | Rama Naicken Lake |
| **Wetland area (ha)** | | | |
| **Buffer Area in Hectare (ha)** | 2734.69 | 2512.22 | 1863.12 |
| **Air Temperature °C** | 38.4 | 29.6 | 28.1 |
| **Water Temperature °C** | 29.8 | 29.1 | 25.2 |
| **Humidity %** | 29 | 45 | 59 |
| **Nutrients in Water** | Oligotrophic | Oligotrophic | Oligotrophic |
| **Water pH** | 9 | 9.39 | 7.9 |
| **Water TDS ppm** | 512 | 1100 | 1020 |
| **Water Conductivity ppm** | 558 | 1554 | 1433 |
| **Light Penetration cms** | 95 | 24 | 85 |
| **Water Salinity ppt** | 1.142 | 0.777 | 7.9 |
| **DO mg/L** | 6.50 | 1.42 | 1.02 |
| **PO4P mg/L** | 0.129 | 0.018 | 0.004 |
| **Water Na ppm** | 110.5 | 638 | 526 |
| **Water K ppm** | 10.1 | 21.6 | 9.9 |
| **Water Li ppm** | 0.15 | 0.5 | 0.4 |
| **Water Ca ppm** | 38.8 | 106.1 | 109.3 |
| **Soil Colour code** | | 7.5YR 6/3 | 7.5YR 6/3 |
| **Soil Colour** | soil was not accessible | Light Brown | Light Brown |
| **Soil pH** | | 7.84 | 7.81 |
| **Soil TDS ppm** | | 654 | 218 |
| **Soil Conductivity ppm** | | 921 | 305 |
| **Soil Salinity ppt** | | 0.452 | 0.148 |
| **Soil Na ppm** | | 103.9 | 34 |
| **Soil K ppm** | | 17.9 | 3.1 |
| **Soil Li ppm** | | 0.2 | 0.1 |
| **Soil Ca ppm** | | 35.3 | 16.3 |

**BarurLake**

The lake is due to the dam constructed on Thenpennai river. The water from the lake is mostly used for irrigation by the surrounding villages.

**Lake Survey Number:** Not Provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Barur lake (Plate 30).

1.2 Villages that surround the wetland include Barur, Keelakuppam, Mettupatti, Nagercoil, Vettrilaikannur, Amanatykkupa, Kavapudur.

1.3 & 1.4 The lake is based in Krishnagiri district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 18'.15.6" N; 12° 18'18.8" N; 12° 18'29.0" N; 12° 18'22.3" N; and Longitude: 078° 18'57.8" E; 078° 19'01.7" E; 078° 19'11.0" E; 078° 18'33.2" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 264 hectares (Map 12.2).

2.2 The Wetland type - the wetland belongs to the Manmade (inland) tank category in the sub category permanent tank.

2.3 Based on the secondary information the average depth is 4.5 meters for the wetland.

2.4 The elevation of the wetland is 435 to 440 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and Krishnarajapuram Dam Canal.
b) The water in the wetland is Permanent in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow joins the adjoining village tanks and agriculture fields.
d) The pH of the water was 8.9 to 9
e) The salinity of the lake was 1.142 ppt.
f) The wetland had aquatic vegetation like *Ipomoea, Prosopis juliflora* and other weeds that dominated the landscape i.e 30%.

2.6 Climatic setting

a) Rainfall for the month of February, 2018 in Ariyalur was 0.0mm.
b) The atmospheric temperature varied between 35.3°C and 38.4 and the humidity was 22 and 29 %

2.7 The area of zone of influence is 2734.69 hectares with a fixed buffer area of 2 kms around the wetland (Map 12.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 80%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0%. |

2.9. The comparison of the wetland for the years 2007 and 2017 is given in Map 12.2& 12.3.

**Section III- Biodiversity**

3.1 List of Plant species:38 species of plants were recorded around the wetland during our visit (Table 12.3).

3.2 List of animal species:79 animal species including 2 domestic species were recorded during the survey (Table 12.4a-h)

3.3 Species of Conservation importance: Threatened species of birds were not observed but three threatened fish species were recorded during the survey (Table 12.4a-h)

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Prosopis juliflora*,*Accacia indica*, *Lantana camara* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species *Tilapia* and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for agriculture. The villagers have open dugout wells and The Panchayat Union provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The overflow water feeds the agricultural lands and adjoining lakes namely Vlappakottai, Konphama, Chaphampatty.

4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose. The Borassus plant sap is also collected for local consumption and sale in the local market.

4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding area.

4.10 The wetland has a major temples along its vicinity and major cultural and religious activities are performed in the wetland.

4.11 The site adjoining the wetland is majorly used by the locals for agriculture and fish culture.

4.12 There are agriculture and plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland does support local fish species.

4.15 There is mining for sand or silt not undertaken.

4.16 The local tourist vist the wetland for its scenic settings.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure.

6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly agriculture practices and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The agricultute within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Barur Lake**


Deivasigamani Manivelu (2013) Comparison of Commercial and Supplementary feeding on Growth Performance of Indian Major Carps Labeo rohita and Oreochromis mossambicus, *International Journal of Current Biotechnology*, 1(8), Pp. 24-28.

Manickam N., Saravana Bhavan P., Santhanam P., Muralisankar T., Srinivasan V., Vijayadevan K. and Bhuvandswari R. (2015) Biodiversity of freshwater zooplankton community and physico-chemical parameters of Barur Lake, Krishnagiri District, Tamilnadu, India, *Malaya Journal of Biosciences*, 2015, 2 (1), Pp.1-12, ISSN 2348-6236, 2348-3075.

Manickam N., Santhanam P., Bhuvandswari R., Saravana Bhavan P., Vijayadevan K., and Ashokan V. (2017 ) Seasonal variations in Zooplankton diversity and physico-chemical characteristics of the Nagavathi reservoir, Dharmapuri District, Tamil Nadu, India, *Journal of Terrestrial and Marine Research*, Vol. 1(1) 2017, Pp. 28-35, ISSN: 2456-7639.


Table 12.3. List of Plant species recorded along the Barur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Capparis grandis* | Tree Caper, Grand Caper | Thottimaram | Capparaceae | Native | NA |
| 3 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 4 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, | Malvaceae | Native | NA |
| 5 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 9 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 10 | *Caesalpinia pulcherrima* | Peacock Flower, Pride of Barbados, Dwarf poinciana | Mayurkonrai | Fabaceae | Native | |
| 11 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 14 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 15 | *Senna didymobotrya* | Popcorn Cassia | --- | Caesalpiniaceae | Native | NA |
| 16 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 17 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 18 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 19 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 20 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 21 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 22 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 23 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 24 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 25 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 26 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 27 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 28 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 29 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 30 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 31 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 32 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 33 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 34 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 35 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 36 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 37 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 38 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 124a: List of Insects recorded along the Barur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 6 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |
| 7 | Flesh Fly | *Sarcophagidae sp.* | Sarcophagidae |

Table 12.4b: List of Butterflies recorded along the Barur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 5 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 8 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 9 | Common Crow | *Euploea core* | Danainae | Common |
| 10 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 11 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 12 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 13 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 14 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 12.4c: List of Dragonflies recorded along the Barur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 12.4d: List of Arachnida recorded along the Barur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 12.4e: List of Fishes recorded form the Barur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 9 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 10 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 12.4f: List of Reptiles recorded along the Barur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 12.4g: List of Birds recorded along the Barur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 6 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 7 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 12 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 13 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 14 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 15 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 16 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 17 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 18 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 19 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 20 | Jacobin Cuckoo | | Cuculidae | Least Concern |
| 21 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 22 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 23 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 24 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 25 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 26 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 27 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 28 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 29 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 30 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 31 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 32 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 33 | Yellow Wagtail | *Motacilla flava* | Motacillidae | Least Concern |

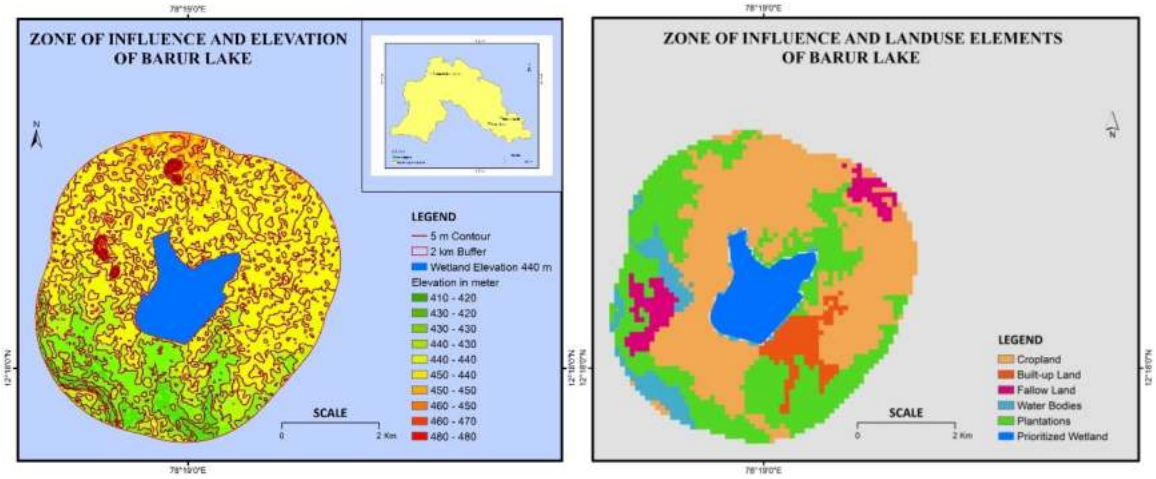
Table 12.4h: List of Mammals recorded along the Barur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Common |

**Map 12.2: Comparative Google imagery for Barur Lake**




**Map 12.3: The zone of influence around the BarurLake.**



**Kondama Eri**

**Lake Survey Number: 220**

**Section I : Identification, Location and Jurisdiction**

1.1 Commonly known as Kondama Eri (Plate 30) also known as Kondomaeri.

1.2 Villages that surround the wetland include Naganur, ottapatti, Sanarravalli, Kalarpathy.

1.3 & 1.4 The lake is based in Pochampalli taluk of Krishnagiri district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12°21'38.6" N; 12°21'35.3" N; 12°21'31.7" N; 12°21'30.2" N; 12° 21'29.6"N; and Longitude: 078° 24'25.7"E; 078° 24'34.8"E; 078° 24'46.3"E; 078°24'55.6"E; 078°24'53.0" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 199 hectares (Map 12.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 4.5 meters for the wetland.

2.4 The elevation of the wetland is 391 to 395 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, Barur eri, the surrounding runoff form the catchment area.
b) The water in the wetland is temporary in nature.
c) The water from the wetlands helps in replenishing the groundwater.
d) The pH of the water was 9.39.
e) The salinity of the lake was 0.777 ppt.
f) The wetland had *Ipomoea, Prosopis juliflora, Lantana camara* and other weeds that dominated the landscape i.e 60%.

2.6 Climatic setting

a) Rainfall for the month of August 2018 in Krishnagiri was 0.0mm.
b) The atmospheric temperature was29.6°C and the humidity was 45 %

2.7 The area of zone of influence is 2512.22 hectares with a fixed buffer area of 2 kms around the wetland (Map 12.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 05%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 10% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2007 and 2018 is given in Map 12.4 & 12.5.

**Section III- Biodiversity**

3.1 List of Plant species: 9 species of plants were recorded around the wetland during our visit (Table 12.5).

3.2 List of animal species: 31 animal species including 4 domestic species were recorded during the survey (Table 12.6a-f)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 12.6a-f)

3.4 Major Plant invasive alien species and extent of invasion:Four invasive plants including *Prosopis juliflora* and *Ipomoea carnea.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species *Tilapia sp.* and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water is not used for drinking The municipality provides drinking water from the Hogenekal dam and borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding area.

4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland.

4.11 The site adjoining the wetland is majorly used by the locals for grazing by cattle.

4.12 There are no agriculture and plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland does support local fish species.

4.15 The mining for sand or silt is not undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a major potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure.

6.3 The wetland water quality is being affected by the polluted barur inflow and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly agriculture practices and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water quality should be treated before it is released intothe wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published literature for the Kondamaeri

Table 12.5: List of Plants recorded along the Kondama Eri

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 2 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 3 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 4 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 5 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 6 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 7 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 8 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 9 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 12.6a: List of Butterflies recorded along the Kondama Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 12.6b: List of Odonates recorded along the Kondama Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 12.6c: List of Fishes recorded form the Kondama Eri

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 2 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 3 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 12.6d: List of Reptiles recorded along the Kondama Eri

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 12.6e: List of Birds recorded along the Kondama Eri

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 11 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 12 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 13 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 14 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 15 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 16 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 17 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 18 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 19 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 22 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |

Table 12.6f: List of Mammals recorded along the Kondama Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |

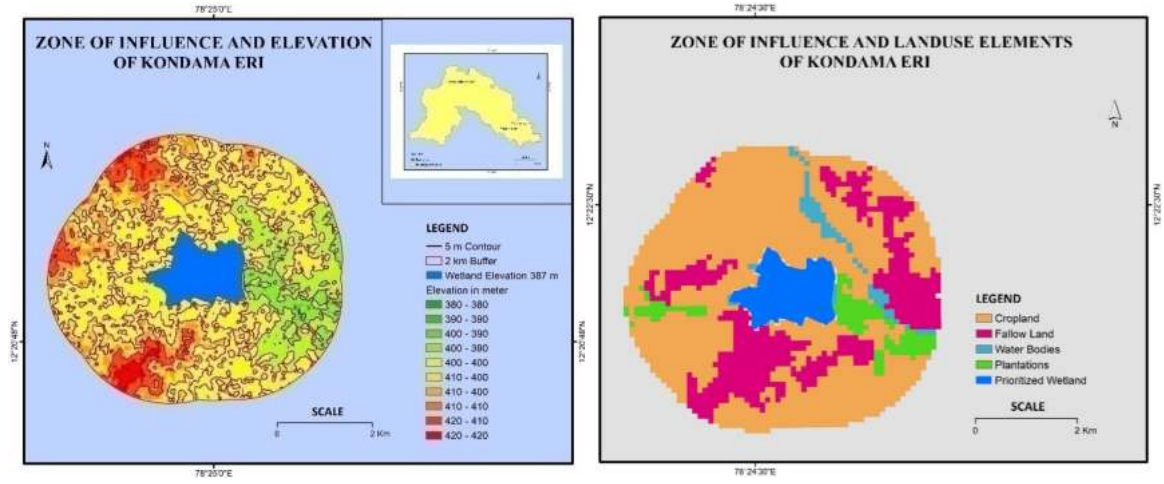
**Map 12.4: Comparative Google imagery for Kondama Eri**







**Map 12.5: The zone of influence around the Kondama Eri.**



**RamaNaickenLake**

**Lake Survey Number:** Not Provided

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as RamaNaickenLake (Plate 31).

1.2 Villages that surround the wetland include Hosur Municipality, Shantinagar, Ramnagar, Park.

1.3 & 1.4 The lake is based in Krishnagiri district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 43'31.3" N; 12° 43'58.4" N; 12° 43'56.4" N; 12° 43'58.2" N; and Longitude: 077° 49'00.9" E; 077° 49'14.9" E; 077° 49'15.9" E; 077° 49'18.7" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 45.8 hectares (Map 12.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category, in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 4.5 meters for the wetland.

2.4 The elevation of the wetland is 881 to 889 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, Avalapalli dam water, the surrounding runoff form the catchment area.
b) The water in the wetland is temporary in nature.
c) The water from the wetlands helps in replenishing the groundwater.
d) The pH of the water was 7.9.
e) The salinity of the lake was 7.9 ppt.
f) The wetland had aquatic vegetation like Eichornea, Parthenium, *Ipomoea, Prosopis juliflora* and other weeds that dominated the landscape i.e 60%.

2.6 Climatic setting

a) Rainfallfor the month of August 2018 in Krishnagiri was 0.0mm.
b) The atmospheric temperature was28.1°C and the humidity was 59 %.

2.7 The area of zone of influence is 1863.12 hectares with a fixed buffer area of 2 kms around the wetland (Map 12.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 0%; | Settlements (rural) 5%; |
| Settlements (Urban) 75%; | Industrial 20% |

2.9. The comparison of the wetland for the years 2004 and 2018 is given inMap 12.6 & 12.7.

**Section III- Biodiversity**

3.1 List of Plant species:9 species of plants were recorded around the wetland during our visit (Table 12.7).

3.2 List of animal species: 59 animal species including 3 domestic species were recorded during the survey (Table 12.8a-g).

3.3 Species of Conservation importance: Two threatened species of birds were observed during the survey (Table 12.8a-g).

3.4 Major Plant invasive alien species and extent of invasion: Four invasive plants including *Parthenium sp.*, *Eichornea carssipes* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Invasive species *Tilapia* and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water is not used for drinking. The wetland being in a urban setting the municipality provides drinking water from the Hogenekal dam and borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding area.

4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland.

4.11 The site adjoining the wetland is majorly used by the locals for solid waste dumping and washing.

4.12 There are no agriculture and plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland does support local fish species.

4.15 The mining for sand or silt not undertaken.

4.16 The local tourist vist the wetland for its scenic settings as boating and walking track is present.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a major potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure.

6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly agriculture practices and compromise in the quality of the water. Solid waste including medical waste is also dumped along the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment in the form of recreation activities should be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no literature available for Rama NaickenLake.

Table 12.7: List of Plants recorded along the Rama Naicken Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 2 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 3 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 4 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 5 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 6 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 7 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 8 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 9 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 12.8a: List of Insects recorded along the Rama NaickenLake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Short horned Grasshopper | *Acridaex altata* | Acrididae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 9 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 12.8b: List of Butterflies recorded along the Rama NaickenLake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 6 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 7 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 9 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 10 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 12.8c: List of Odonates recorded along the Rama NaickenLake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Tricoloured Marsh Hawk | *Orthetrum luzonicum* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 12.8d: List of Fishes recorded form the Rama NaickenLake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 3 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 4 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 12.8e: List of Reptiles recorded along the Rama NaickenLake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 12.8f: List of Birds recorded along the Rama NaickenLake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 4 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 12 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 13 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 14 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 15 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 16 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 17 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 18 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 19 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 20 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 21 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 22 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 23 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 24 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 25 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

Table 12.8g: List of Mammals recorded along the Rama NaickenLake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

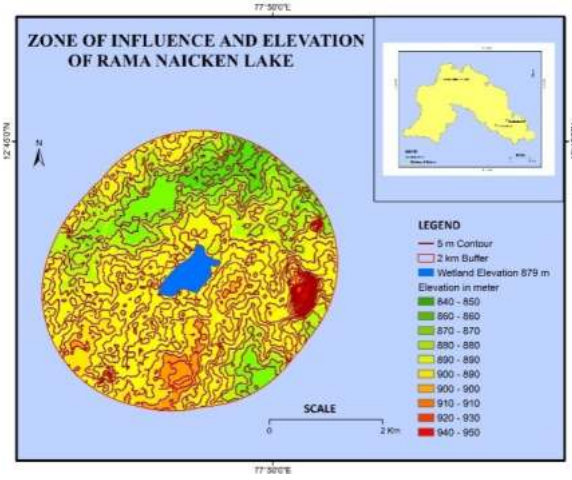
**Map 12.6: Comparative Google imagery for Rama Naicken Lake**

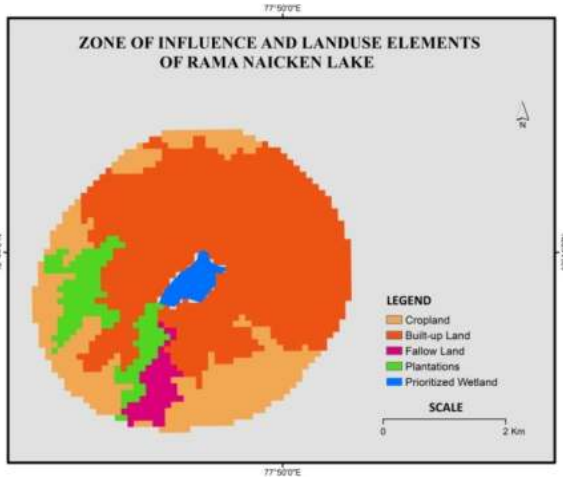






**Map 12.7: The zone of influence around the Rama NaickenLake.**



## 13. Madurai District

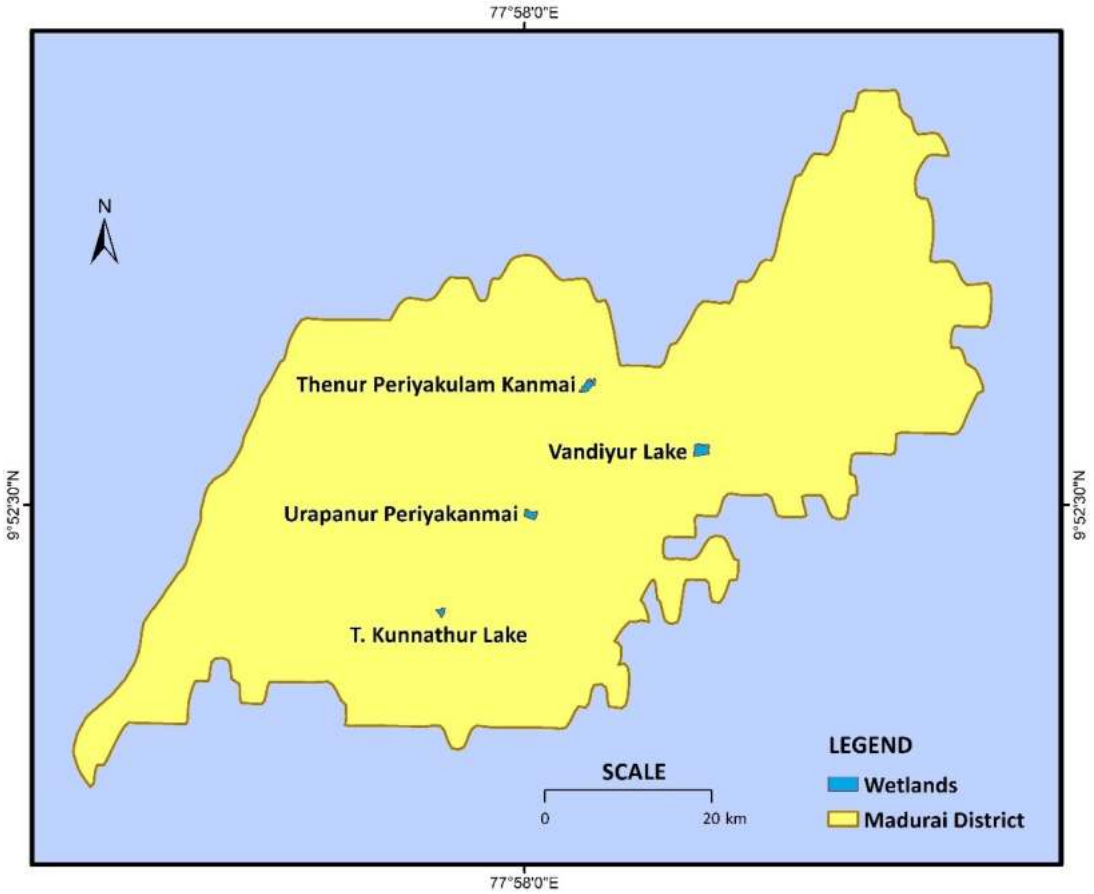
### 1. Introduction

Madurai is the third largest city in Tamil Nadu after Chennai and Coimbatore. Madurai district is surrounded by several mountains, it is located on the banks of River Vaigai, Madurai has been a major settlement for two millennia. Madurai is called by various names like *Athens of the East*, *ThoongaNagaram* (City that never Sleeps), *Naan maadakoodal* (City of Four junctions), *MalligaiManagar* (City of Jasmine), *KoodalManagar* (City of Junction) *Koil Nagar* (Temple city) etc. The city is believed to be of significant antiquity and has been ruled, at different times, by the Pandyas, Cholas, Madurai Sultanate, Vijayanagar Empire, Madurai Nayaks, Carnatic kingdom, and the British.

The city has a number of historical monuments, with the Meenakshi Amman Temple and Tirumalai Nayak Palace being the most prominent. Madurai is an important industrial and educational hub in South Tamil Nadu. The city is home to various automobile, rubber, chemical and granite manufacturing industries. It has developed as a second-tier city for information technology (IT), and some software companies have opened offices in Madurai.

Total geographic area of Madurai is 3741.73 km². Total area under wetland is 24614 ha, which includes 984 small wetland (<2.25 ha). Lakes/Ponds occupies 48.52% of wetland area. The second major wetland type is Tanks/Ponds. There are 1051 Tanks/Ponds with 9732 ha area (39.54%).

SACON during 2004 had prioritized two wetlands form Madurai district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these two wetlands to assess its present potential for conservation. (Map13.1).The other two wetlands were selected based on the google imagery and the decadel changes.




**Map 13.1: Wetlands of Madurai district assessed for Prioritization**

**Observations**

Of the fourwetlands selected in the district, Vandiyur is the largest while T. Kunnathur is the smallest of the four wetlands. Around the wetlands, we recorded 95 plant species both aquatic and terrestrial including 15 invasive species (Table 13.1). The faunal components totaled 83 species with the representation of 36 bird species including the wetland birds. The field study revealed that Vandiyur Lake was Eutrophic with high levels of phosphorus while the other three wetlands were dry T Kunnathur also had eutrophic status based on the vegetation cover while for the other two wetlands the status was notknown (Table 13.2). Based on the soil characteristics we observed the three dry wetlands had varying levels of hydric properties that were deteriorating and need conservation.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages/ city. The threats observed were increasing growth of invasive species, encroachment and agriculture within the wetland whilemining of lake sediments was a major threat to all the three dry wetlands in addition to the release of sewage at Vandiyurthat influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Thenur Periyakulam Kanmai
2. T. Kunnathur Lake
3. Urapanur Periyakanmai
4. Vandiyur Lake

Table 13.1: The flora and fauna recorded form the wetlands of Madurai District

| S. No | Name of the Wetland | Plants | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Vandiyur Lake | 50(10) | 4 | 6 | 7 | 1 | 7 | 0 | 1 | 23 | 3 |
| 2 | T. Kunnathur Lake | 35(8) | 4 | 2 | 16 | 0 | 0 | 0 | 1 | 16 | 3 |
| 3 | ThenurPeriyakulamKanmai | 28(9) | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 12 | 1 |
| 4 | UrapanurPeriyakanmai | 36(5) | 3 | 2 | 3 | 0 | 0 | 0 | 1 | 14 | 3 |
| | Total | 95(15) | 9 | 7 | 18 | 1 | 7 | 0 | 1 | 36 | 4 |

Table 13.2: The water and soil quality assessed form the wetlands of Madurai District

| District Name | Madurai | | | |
|---|---|---|---|---|
| **Wetland Name** | T. Kunnathur | Thenur Periyakulam Kanmai | Urapanur Periyakanmai | Vandiyur Lake |
| **Wetland area (ha)** | | | | |
| **Buffer Area in Hectare (ha)** | 2007.87 | 2448.85 | 2255.67 | 2524.25 |
| **Air Temperature °C** | 39 | 30 | 28 | 28.8 |
| **Water Temperature °C** | | | | 27.9 |
| **Humidity %** | 40 | 48 | 55 | 42 |
| **Nutrients in Water** | Eutrophic | not known | not known | Eutrophic |
| **Water pH** | | | | 8.7 |
| **Water TDS ppm** | | | | 1306 |
| **Water Conductivity ppm** | | | | 811 |
| **Light Penetration cms** | | | | 23 |
| **Water Salinity ppt** | | | | 0.927 |
| **DO mg/L** | | | | 0.00 |
| **PO4P mg/L** | | | | 1.113 |
| **Water Na ppm** | | | | 208 |
| **Water K ppm** | | | | 20.85 |
| **Water Li ppm** | | | | 0.1 |
| **Water Ca ppm** | | | | 17.65 |
| **Soil Colour code** | 10YR 5/1 | 7.5YR 4/4 | 10YR 5/4 | 7.5YR 6/3 |
| **Soil Colour** | Gray | Brown | Yellowish Brown | Light Brown |
| **Soil pH** | 7.96 | 7.72 | 7.18 | 7.69 |
| **Soil TDS ppm** | 282 | 256 | 173 | 296 |
| **Soil Conductivity ppm** | 398 | 363 | 243 | 416 |
| **Soil Salinity ppt** | 0.19 | 0.174 | 0.118 | 0.201 |
| **Soil Na ppm** | 8.6 | 20.3 | 11.7 | 48.8 |
| **Soil K ppm** | 7.9 | 9.6 | 7.4 | 8.2 |
| **Soil Li ppm** | 0.1 | 0.1 | 0.1 | 0.1 |
| **Soil Ca ppm** | 37.3 | 24.1 | 7.3 | 21.3 |

**T. KunnathurLake**

**Lake Survey Number:** 138/1.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Kunnathur Lake (Plate 32) also known as Tirumangalam Kunnathur and Kariselkulam Kanmai

1.2- Villages that surround the wetland include T. Kunnathur, Goundanpatti, Pappunayakkanpatty, Rengapalayam.

1.3 & 1.4 The Lake is based in Madurai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 45'42.7" N; 09° 45'34.6" N; 9° 45'38.6" N; and Longitude: 077° 52'51.4" E; 077° 52'50.1" E; 077° 52'51.0" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Madurai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 70.5 hectares (Map 13.2).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category, in the sub category intermittent seasonal lakes (water is present for a few weeks during the monsoon).

2.3 Based on the secondary information the average depth is 2 meters for the wetland.

2.4 The elevation of the wetland is 145 to 148 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is intermitent nature with some water is present only for a few weeks during the rains, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the wetland was completely dry.
c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.
d) The pH of the water was not assessed as there was no water
e) The lake has fresh water as informed by the locals.
f) The wetland was completely dry and the aquatic vegetation like *Ipomoea*sp.and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfallfor the month of January 2018 in Madurai was 16 mm.
b) The atmospheric temperature varied between 26.8 and 28 °C and the humidity was 74 and 76 %

2.7 The area of zone of influence is 2007.87 hectares with a fixed buffer area of 2 kms around the wetland (Map 13.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/scrubland 0%; |
| Agricultural lands 80 %; | Settlements (rural) 0% |
| Settlements (Urban) 20%; | Industrial 0%. |

2.9 The comparison of the wetland for the years 2004 and 2017 is given in Map 13.2 & 13.3.

**Section III- Biodiversity**

3.1 List of Plant species: 32 species of plants were recorded around the wetland during our visit (Table 13.3).

3.2 List of animal species: 42 animal species including 3 domestic species were recorded during the survey (Table 13.4a-f).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 13.4a-f) however there are records of threatened birds sightings until 2002.

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion : no invasive species were recorded. Fishing is not practiced in the wetland as the wetland is mostly dry and has only hydric soil.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose as the water is present for brief period. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The are few farmlands where agriculture is undertaken around the wetland using borewell water.
4.3 Fishery is not undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no runoff form the surrounding area as it is a water deficient area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing throught he wetland.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.
4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 There is very minimal agriculture around the wetland.
5.4 Grazing by the cattle is undertaken in the wetland.
5.5 There is no withdrawal of water for agriculture or fishery purpose.
5.6 The wetland was faced drought for the past 5-7 years.
5.7 The locals are well aware of the importance of the wetland with the presence of the civil society group that undertakes regular cleaning and awareness activities around the lake.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.
6.2 The wetland has been facing drought condition for the past 5 years.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for T. Kunnathur Lake**


Kumaran Sathasivam. (2015) The birds of Madurai city. *Indian Birds* 10 (2): 29–34.

Narayanan T. B. and Sathasivam K. (2002).Unusually large congregation of Glossy Ibis (*Plegadis falcinellus*) at Madurai.*Newsletter for Birdwatchers* 42 (1): 13.

Narayanan T.B. (1994) Southern most record of Common Pochard *Aythya ferina*(Linnaeus, 1758) and Tuffed duck *Aythya fuligula*(Linnaeus, 1758) in Madurai District, Tamil Nadu. *Journal of Bombay Natural History Society* 91(3): 452–453.

Pullaiah T and Chandrasekhar Naidu K. (2003) *Antidiabetic plants in India and herbal based antidiabetic research.* Botany Medical: Daya Books.

Samidurai Jayakumar, Muralidharan S. and Santhanakrishnan Babu. (2014) A hitherto unrecorded sighting of the Common Pochard *Aythya ferina* (Linnaeus, 1758) (Aves: Anseriformes: Anatidae) in Vedanthangal Bird Sanctuary, Tamil Nadu, India. *Journal of Threatened Taxa.*6(11): 6485–6487.

Sharma B. K. (2009) Biodiversity and Distribution of Freshwater Rotifers (Rotifera: Eurotatoria) of Tamil Nadu. *Records of the Zoological Survey of India*. 109(3): 41-60.

Sumithira G., Kavya V., Ashma A. and Kavinkumar M.C. (2017) A Review of Ethanobotanical and Phytopharmacology of *Ottelia alismoides* (L.) PERS. *International Journal of Research in Pharmacology &Pharmacotherapeutics*.6(3): 302-311.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 13.3. List of Plant species recorded along the T.Kunnathur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 2 | *Sida rhombifolia* | Cuban jute, Jelly leaf, Queensland hemp | Kurundotti | Malvaceae | Native | |
| 3 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 7 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 8 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 9 | *Terminalia catappa* | Indian Almond | Nattuvadumai, Vadumai | Combretaceae | Native | NA |
| 10 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 11 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 12 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 13 | *Madhucalongifolia var. latif olia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 14 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 15 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 16 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 17 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 18 | *Justicia adhatoda* | Malabar Nut, white vasa, yellow vasa | Acalai, Atatotai, Attucam, Cimma-muki, Cinkam, Cuvatu, Iratta-pittam, Kattu-murunkai, Pavattai, Vacai, Vacati, Vaittiya-mata | Acanthaceae | Native | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 20 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 21 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 22 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 23 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 24 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 25 | *Phyllanthus maderaspatensis* | Madras Leaf flower | Nilandlli | Phyllanthaceae | Native | NA |
| 26 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 27 | *Bulbostylisbarbata* | Water Garss | | Cyperaceae | Native | NA |
| 28 | *Fimbristylis dichotoma* | | | Cyperaceae | Native | LC |
| 29 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 30 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 31 | *Eragrostis gangetica* | SlimflowerLovegrass | | Poaceae | Native | NA |
| 32 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 13.4a: List of Insects recorded along the T. Kunnathur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Colour Grasshopper | *Neorthacris acuticeps* | Pyrgomorphidae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 13.4b: List of Butterflies recorded along the T. Kunnathur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 12 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 13 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 14 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |
| 15 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 16 | Heliotrope Moth | *Utetheisa pulchelloides* | Erebidae | Common |

Table 13.4c: List of Dragonflies recorded along the T. Kunnathur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 13.4d: List of Reptile recorded along the T. Kunnathur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 13.4e: List of Birds recorded along the T. Kunnathur Lake

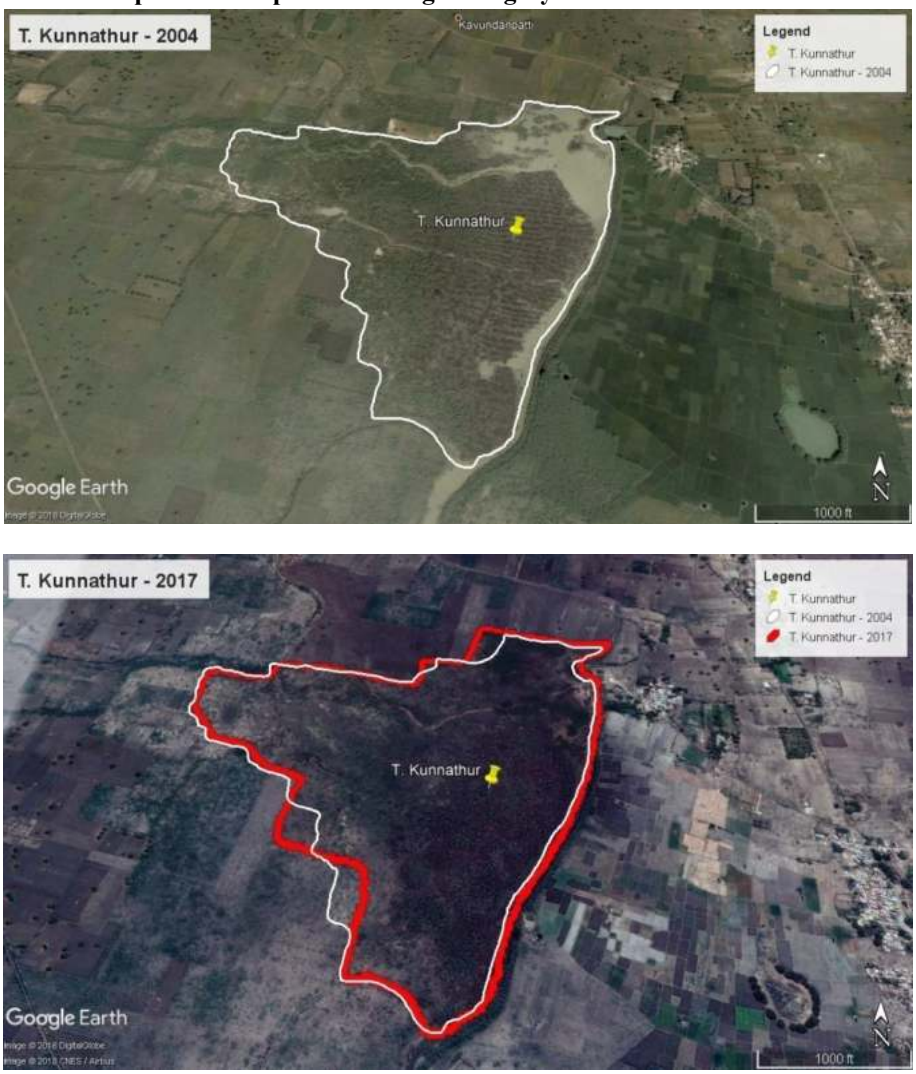
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | LC |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | LC |
| 3 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | LC |
| 4 | Common Pigeon | *Columba livia* | Columbidae | LC |
| 5 | Spotted Dove | *Spilopelia chinensis* | Columbidae | LC |
| 6 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | LC |
| 7 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | LC |
| 8 | Indian Roller | *Coracias benghalensis* | Coraciidae | LC |
| 9 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | LC |
| 10 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | LC |
| 11 | House Crow | *Corvus splendens* | Corvidae | LC |
| 12 | Plain prinia | *Prinia inornata* | Cisticolidae | LC |
| 13 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | LC |
| 14 | Common Myna | *Acridotheres tristis* | Sturnidae | LC |
| 15 | Purple-rumped Sunbird | *Leptocoma zylonica* | Nectariniidae | LC |
| 16 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

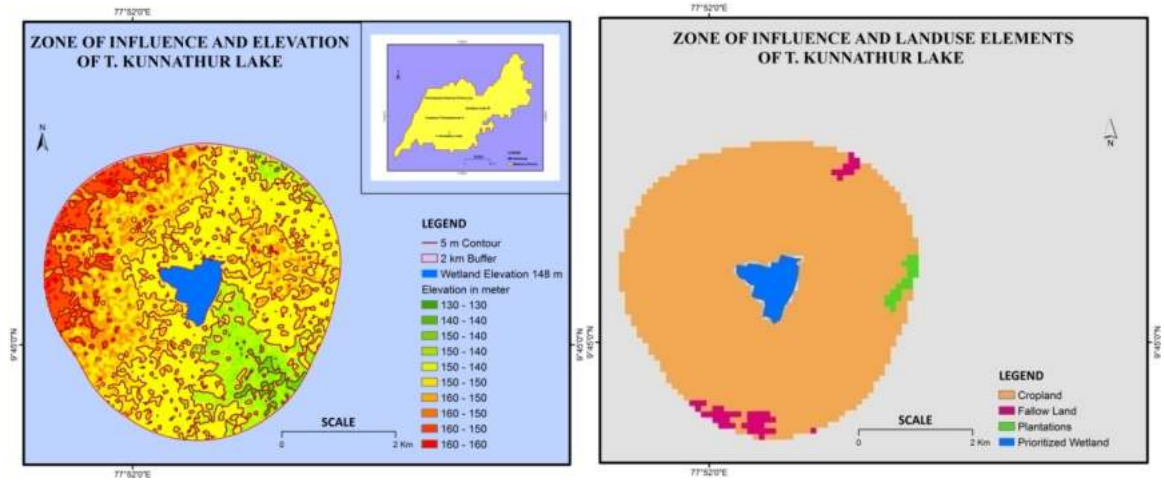
Table 13.4f: List of Mammals recorded along the T. Kunnathur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |

**Map 13.2: Comparative Google imagery for T.Kunnathur Lake**




**Map 13.3: The zone of influence around the T. Kunnathur Lake.**



**Thenur Periyakulam Kanmai**

**Lake Survey Number:** 43/1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as ThenurKanmai (Plate 32). also known as Thenur Periyakulam Kanmai.

1.2 Villages that surround the wetland include Thenur.

1.3 & 1.4 The lake is based in Madurai north taluka in Madurai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 59'55.9" N; 09° 59'58.1" N; and Longitude: 078° 00'47.5" E; 078° 00'48.4" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Madurai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 159 hectares (Map 13.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 1 to 2.5 meters for the wetland.

2.4 The elevation of the wetland is 161 to 165 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area, direct and indirect influence of Vaigai River.

b) The water in the wetland is intermitent nature with some water is present only for a few months during the rains, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the wetland was completely dry.

c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.

d) The pH of the water was not assessed as there was no water.

e) The lake has fresh water as informed by the locals.

f) The wetland was completely dry and the aquatic vegetation like *Ipomoea aquatic* and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfallfor the month of January, 2018 in Madurai was 16 mm.

b) The atmospheric temperature was30 °C and the humidity was 48 %

2.7 The area of zone of influence is 2448.85 hectares with a fixed buffer area of 2 kms around the wetland (Map 13.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/scrubland 0%; |
| Agricultural lands 85 %; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0%. |

2.9 The comparison of the wetland for the years 2012 and 2018 is given inMap 13.4 & 13.5.

**Section III- Biodiversity**

3.1 List of Plant species:24 species of plants were recorded around the wetland during our visit (Table 13.5).

3.2 List of animal species: 23 animal species including 1 domestic species were recorded during the survey (Table 13.6a-f).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 13.5a-f).

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion : no invasive species were recorded. Fishing is not practiced in the wetland as the wetland is mostly dry and has only hydric soil.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose as the water is present for brief period. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The are few farmlands where agriculture is undertaken around the wetland using borewell water.
4.3 Fishery is undertaken when water is present for commercial purpose.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no runoff form the surrounding area as it is a water deficient area but if excess water then it overflows to Vaigai river.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present.
4.15 There was mining for sand or silt undertaken during our visit.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken when water is present.
5.2 There is no agriculture undertaken within the wetland.
5.3 There is agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is no withdrawal of water for agriculture or fishery purpose.
5.6 The wetland has faced drought for the past 3-4 years.
5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.
6.2 The wetland has been facing drought condition for the past 4 years.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character.
Soil mining should also be prohibited to retain the character ofhte wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**
Sand mining can be regulated if essential.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**
There is no published Literature available forThenur Periyakulam Kanmai

Table 13.5: List of Plants recorded along the Thenur Periyakulam Kanmai

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 2 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 3 | *Delonix regia* | Flame Tree | | Fabaceae | Invasive | LC |
| 4 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 5 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 6 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 7 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 8 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 9 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 10 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 11 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 12 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 13 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 14 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 15 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 16 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 17 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 18 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 19 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 20 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 21 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 22 | *Cyperus dubius* | White Water Sedge | Velutthanirbasi | Cyperaceae | Native | LC |
| 23 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 24 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 13.6a: List of Insects recorded along the Thenur Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Short horned Grasshopper | *Acridaex altata* | Acrididae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 13.6b: List of Butterflies recorded along the Thenur Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Zebra Blue | *Leptotes plinius* | Polyommatinae | Common |

Table 13.6c: List of Odonates recorded along the Thenur Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 13.6d: List of Reptiles recorded along the Thenur Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

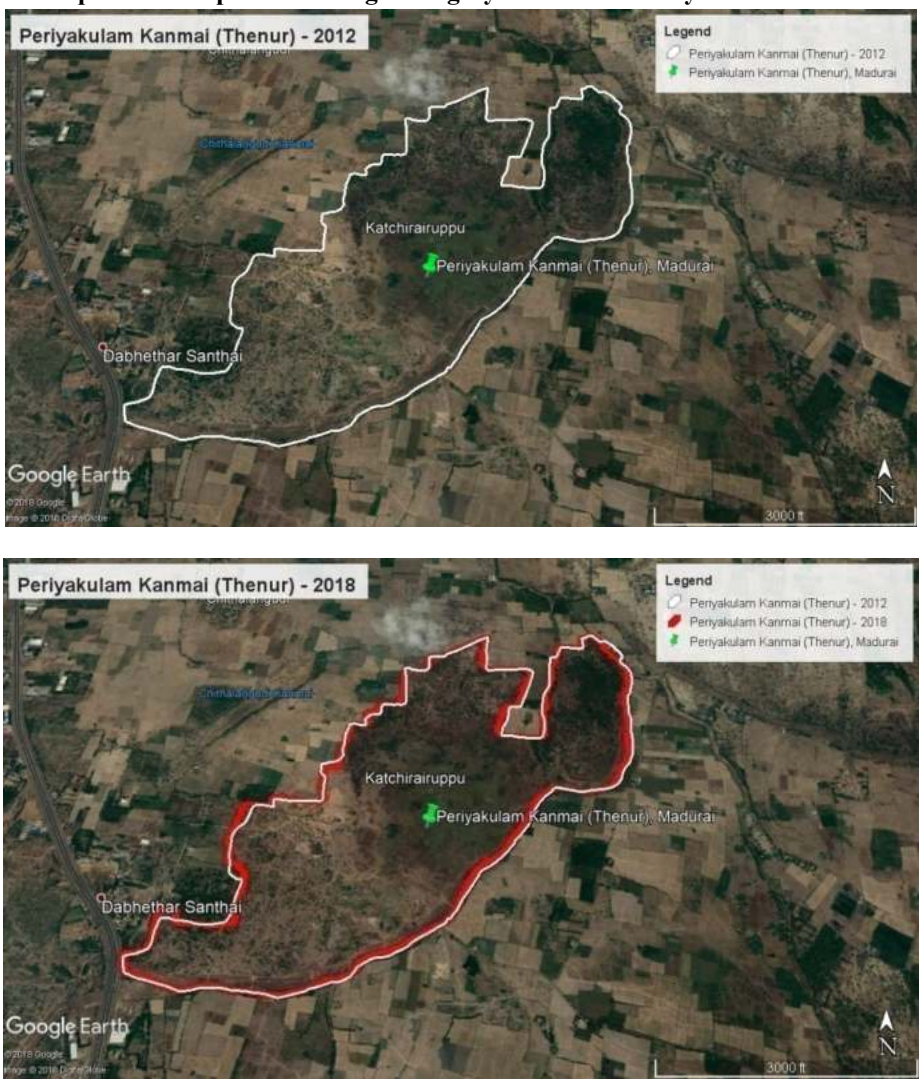
Table 13.6e: List of Birds recorded along the Thenur Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 3 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 4 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 5 | Common Hawk Cuckoo | *Hierococcyx varius* | Cuculidae | Least Concern |
| 6 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 7 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 8 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 9 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 10 | Jerdon'sBushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 11 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 12 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

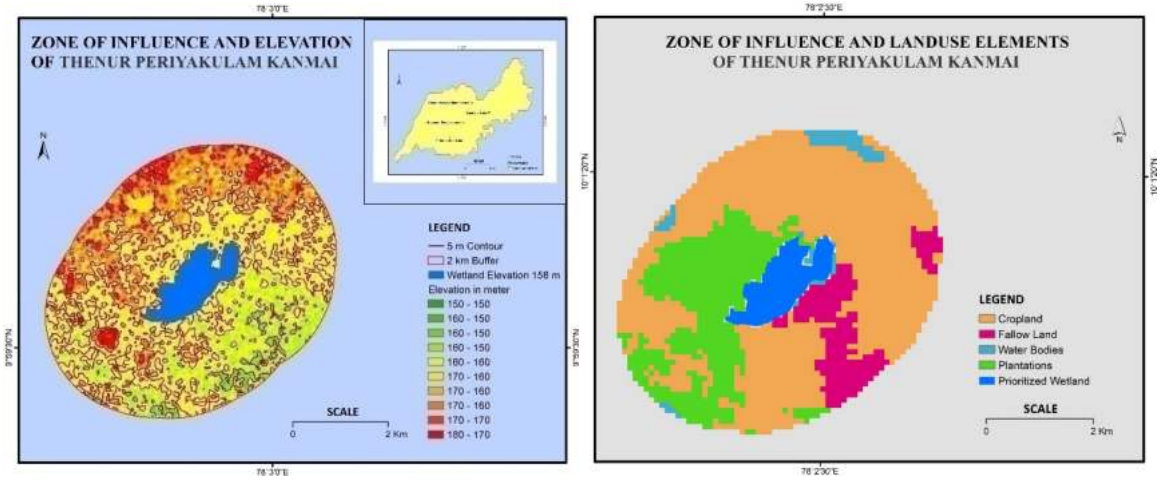
Table 13.6f: List of Mammals recorded along the ThenurPeriyakulamKanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |

**Map 13.4: Comparative Google imagery for Thenur Periyakulam Kanmai**




**Map 13.5: The zone of influence around the Thenur Periyakulam Kanmai.**



**Urapanur Periyakanmai**

**Lake Survey Number:**Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Urapanur Periyakanmai (Plate 33), also known as Urapanur periyakulam Kanmai.

1.2 Villages that surround the wetland include MelaUrapannur, Oorunea Uraapannur, Pallathupatti.

1.3 & 1.4 The lake is based in Tirumangalam taluka in Madurai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 51'46.8" N; 09° 51'36.8" N; 09° 51'31.9" N; and Longitude: 077° 58'47.6" E; 077° 58'41.0" E; 077° 58'35.3" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Madurai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 128 hectares (Map 13.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is up to 6 meters for the wetland.

2.4 The elevation of the wetland is 141 to 146 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area,direct and indirect influence of the surrounding wetlands it is a complex wetland.

b) The water in the wetland is intermitent nature with some water is present only for a few months during the rains, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the wetland was completely dry.

c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.

d) The pH of the water was not assessed as there was no water.

e) The lake has fresh water as informed by the locals.

f) The wetland was completely dry and the aquatic vegetation like Ipomoea aquatic and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfallfor the month of January, 2018 in Madurai was 16 mm.

b) The atmospheric temperature was28 °C and the humidity was 55 %

2.7 The area of zone of influence is 2255.67 hectares with a fixed buffer area of 2 kms around the wetland (Map 13.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/scrubland 0%; |
| Agricultural lands 70 %; | Settlements (rural) 25%; |
| Settlements (Urban) 0%; | Industrial 5%. |

2.9 The comparison of the wetland for the years 2010 and 2018 is given in Map 13.6 & 13.7.

**Section III- Biodiversity**

3.1 List of Plant species: 34 species of plants were recorded around the wetland during our visit (Table 13.7).

3.2 List of animal species: 26 animal species including 3 domestic species were recorded during the survey (Table 13.8a-f)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 13.8a-f).

3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Vachellia nilotica* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Fishing is practiced in the wetland when water is present the wetland is mostly dry and has only hydric soil.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose as the water is present for brief period. The bore is even dug inside the wetland and used for drinking. The municipal corporation provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The are few farmlands where agriculture is undertaken around the wetland using borewell water.
4.3 Fishery is undertaken when water is present for commercial purpose.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area as it is a water deficient area but if excess water then it overflows to adjoining wetlands.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present.
4.15 The mining for sand or silt is undertakent.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken when water is present.
5.2 There is no agriculture undertaken within the wetland.
5.3 There is agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture by digging borewells in the wetland area.
5.6 The wetland has faced drought for the past 9 years due to very poor rains.
5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water.
6.2 The wetland has been facing drought condition for the past 9 years.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character.
Soil mining should also be prohibited to retain the character of the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Sand mining can be regulated if essential.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no literature available for Urapannur Periyakanmai.

Table 13.7: List of Plants recorded along the Urapanur Periyakanmai

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Malvastrumcoromandelianum subsp. coromandelianum* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 4 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 5 | *Crotalaria pallida* | Smooth Rattlepod | --- | Fabaceae | Native | NA |
| 6 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 7 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 8 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 9 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 10 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 11 | *Glinus oppositifolius* | Jima | Pampantra, Thurapoondu | Molluginaceae | Native | NA |
| 12 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 13 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 14 | *Oldenlandiaum bellata* | Chay Root, Indian madder, Choy root | Chayam, Chayaver, Emboorel, Imbura-ver | Rubiaceae | Native | |
| 15 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 16 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 17 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 18 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 19 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 20 | *Pedalium murex* | Large caltrops | Yanainerunji,Perunerunji | Pedaliaceae | Native | NA |
| 21 | *Justicia adhatoda* | Malabar Nut, white vasa, yellow vasa | acalai, atatotai, attucam, cimma-muki, pavattai, vacai, vacati, vaittiya-mata | Acanthaceae | Native | |
| 22 | *Justicia tranquebariensis* | Tarangambadi Justicia | PunnakuPoodu, Narimurunkaicceti, Niyakkiyam | Acanthaceae | Native | |
| 23 | *Boerhavia repens* | Erect Spiderling | | Nyctaginaceae | Invasive | NA |
| 24 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 25 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 26 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 27 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 28 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 29 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 30 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 31 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 32 | *Cyperus rotundus* | Common nut sedge, coco grass, nutgrass, purple nutsedge | Korai, korai kilangu, muthakasu | Cyperaceae | Native | LC |
| 33 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 34 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 13.10a: List of Insects recorded along the Urapanur Periyakanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 13.8b: List of Butterflies recorded along the Urapanur Periyakanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 2 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 3 | Tawny Coster | *Acraea violae* | Acraeinae | Common |

Table 13.8c: List of Odonates recorded along the Urapanur Periyakanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 13.8d: List of Reptiles recorded along the Urapanur Periyakanmai

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

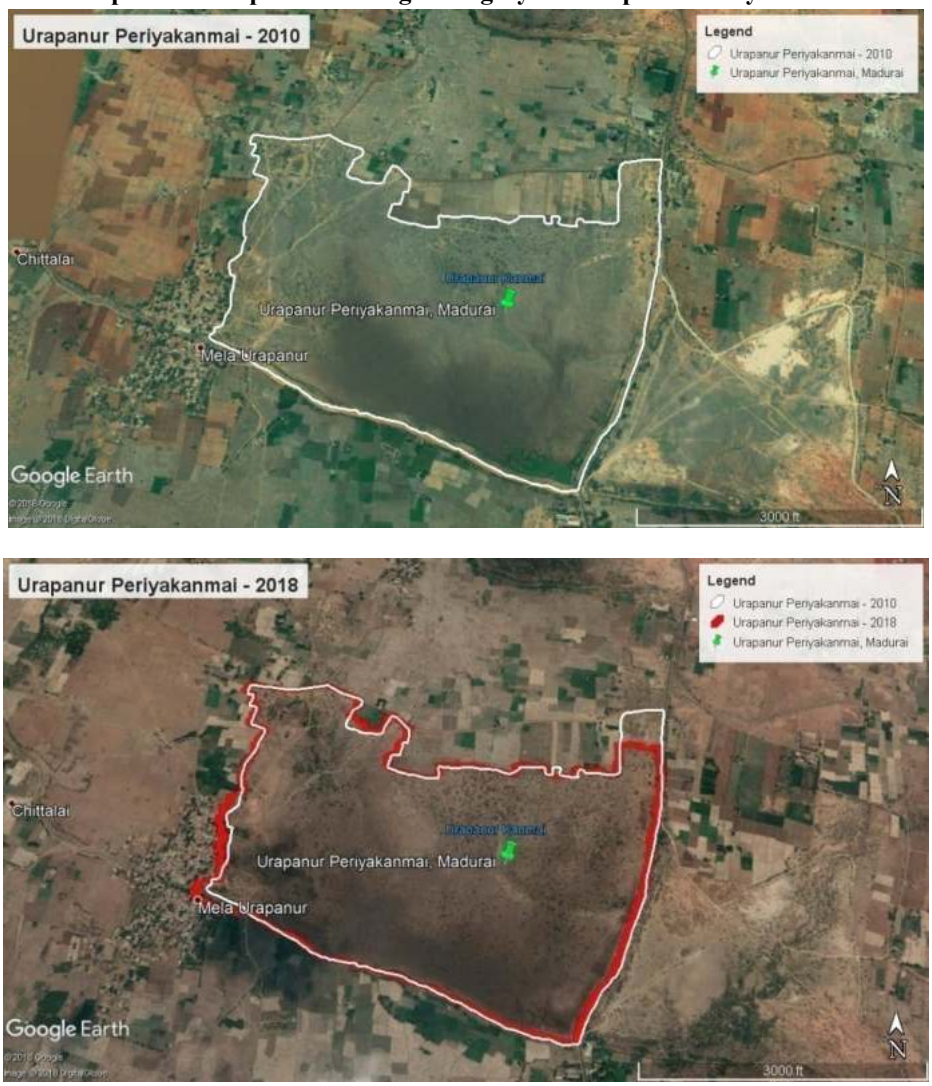
Table 13.8e: List of Birds recorded along theUrapanur Periyakanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 4 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 5 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 6 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 7 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 8 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 9 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 10 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 11 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 12 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 13 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 14 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

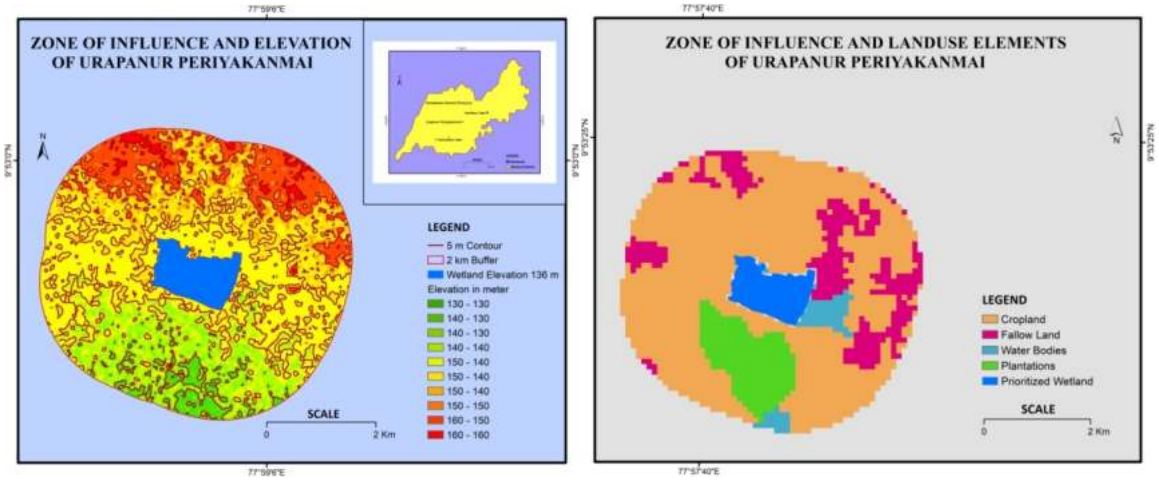
Table 13.8f: List of Mammals recorded along the Urapanur Periyakanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |

**Map 13.6: Comparative Google imagery for Urapanur Periyakanmai**




**Map 13.7: The zone of influence around the Urapanur Periyakanmai.**



**Vandiyur Lake**

Vandiyur Lake is one of the largest surface water bodies in the city. This mesotrophic lake is located in the suburbs of Madurai city at an altitude of 126.3 m amsl. Its total surface area is 231.58 ha with depth ranging form 2 to 12 m. The sewage form inhabitants living around the lake at a distance of 6 kms is discharged through the drain into the lake.

**Lake Survey number**: 1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Vandiyur Lake (Plate 33).

1.2 Villages that surround the wetland includeVandivoor, Melamadai, Managari.

1.3 & 1.4 The lake is based in Madurai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 56'25.2" N; 09° 56'2.19" N; 09° 55'56.0" N; 09° 55'58.3" N; and Longitude: 078° 09'02.5" E; 078° 09'03.5" E; 078° 08'59.4" E; 078° 09'01.4" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Madurai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 230 hectares (Map 13.8).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 3.0 meters for the wetland.

2.4 The elevation of the wetland is 134 to 138 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, groundwater, and the surrounding runoff form the catchment area and form the Vaigai River.
b) The water in the wetland is mostly of intermittent nature with extreme rare occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded up to 8.7.
e) The lake has fresh water with the salinity recorded at 0.927 ppt at the time of sampling.
f) The wetland was observed to be closer to Eutrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation. Moreover, the wetland receives large quantities of sewage and effluents and is rich in nutrients the wetland has agriculture undertaken within the wetland.

2.6 Climatic setting

a) Rainfallfor the month of December in Madurai was 16 mm.
b) The atmospheric temperature was28°C and the humidity was 39 to 42 %

2.7 The area of zone of influence is 2524.67 hectares with a fixed buffer area of 2 kms around the wetland (Map 13.8).

2.8 The major land use around the wetland comprised of

Agriculture 30%; Grassland, 20%;
Industrial 50%; Settlements (Urban).

2.9 The comparison of the wetland for the years 2002 and 2017 is given in Map 13.8 & 13.9.

**Section III- Biodiversity**

3.1 List of Plant species: 47 species of plants were recorded around the wetland during our visit (Table 13.9).

3.2 List of animal species: 52 animal species including 2 domestic species were recorded during the survey (Table 13.10a-h)

3.3 Species of Conservation importance: One near Threatened specie of fish were observed during the survey (Table 13.10a-h)

3.4 Major Plant invasive alien species and extent of invasion: Ten plants including *Eichornea crassipes*, several grass species, *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.* formed nearly 90 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that wasrecorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.

4.3 Fishery is undertaken without any permission in the lake, recreational fishery is also practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 Recreational fishery, Jogging track, skating track, garden, and other recreations activities are in full swing around the wetland.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland does not have any several temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.

4.11 The site is only majorly used by walkers and the skating track.

4.12 There are agriculture or plantation activities within the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a vast diversity of fishery although the commercial fishery is not.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is no withdrawal of water for agriculture as the agriculture is practiced within the wetland.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.

6.3 There is no organized fishing activity but some fish is cultured by few local families.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. The siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chandl should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Vandiyur Lake


Balamurugan C. and Dheenadayalan M.S. (2012) Studies on the quality of groundwater in Madurai, Tamilnadu. *India. Journal of Chemical and Pharmaceutical Research*. 4(3):1632-1637.

Leena Hebsibai L., Dheenadayalan M.S. and Sivakumar K.K. (2012) An Assessment Study on the Quality of Industrial effluents in and around Vandiyur Lake, Madurai, Tamil Nadu, India.*Journal of Chemical, Biological and Physical Sciences*. 2(3): 1556-1559.

Saravanan P., Padmasri S. and Lakshmi K. (2012) Urban Sprawl and its Transformation Over Land Use / Land Cover Using Geo Informatics: A Case Study on Madurai Fringe Area. *Bonfring International Journal of Industrial Engineering and Management Science*. 2(1): 41-45.

Sharma B. K. (2009) Biodiversity and Distribution of Freshwater Rotifers (Rotifera: Eurotatoria) of Tamil Nadu. *Records of the Zoological Survey of India*. 109(3): 41-60.

Soundararajan N., Mohan Raj R., Kamaladhasan N., Indhar Saidanyan R. and Chandrasekaran S. (2015) On-line trade of aesthetic exotic organisms: sword of Damocles? *Current Science*. 109(8): 1404-1410.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 13.9: List of Plant species recorded along the Vandiyur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abelmoschus angulosus* | --- | KattuSemparuthi | Malvaceae | Native | NA |
| 2 | *Ceiba pentandra* | Kapok, Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 3 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 4 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 5 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 9 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 10 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 11 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 14 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 15 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 16 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 17 | *Cucurbita moschata* | Butternut Pumpkin, butternut squash | Pucani | Cucurbitaceae | Introduced | |
| 18 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 19 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 20 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 21 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 22 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 24 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 25 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 26 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 27 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 28 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 29 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 30 | *Pedalium murex* | Large caltrops | Yanainerunji,Peruneru nji | Pedaliaceae | Native | NA |
| 31 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 32 | *Torenia crustacea* | Brittle False Pimpernel | | Linderniaceae | Native | LC |
| 33 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 34 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 35 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 36 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 37 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 38 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 39 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 40 | *Spirodelapolyrhiza* | Duckweed | | Araceae | Native | LC |
| 41 | *Cyperuscorymbosus* | Peri peri | | Cyperaceae | Native | NA |
| 42 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 43 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 44 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 45 | *Echinochloa crus-galli* | Barnyard Grass | | Poaceae | Native | LC |
| 46 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 47 | *Urochloasetigera* | Signal grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 13.10a: List of Insects recorded along the Vandiyur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 13.10b: List of Butterflies recorded along the Vandiyur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 4 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 5 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Tawny Coster | *Acraea violae* | Acraeinae | Common |

Table 13.10c: List of Dragonflies recorded along the Vandiyur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Coral-Tailed Cloud Wing | *Tholymis tillarga* | Libellulidae | Common |

Table 13.10d: List of Arachnida recorded along the Vandiyur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 13.10e: List of Fishes recorded form the Vandiyur Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 13.10f: List of Reptiles recorded along the Vandiyur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 13.10g: List of Birds recorded along the Vandiyur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 10 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 11 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 12 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 13 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 14 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 15 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 16 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 17 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 18 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 19 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 22 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 23 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

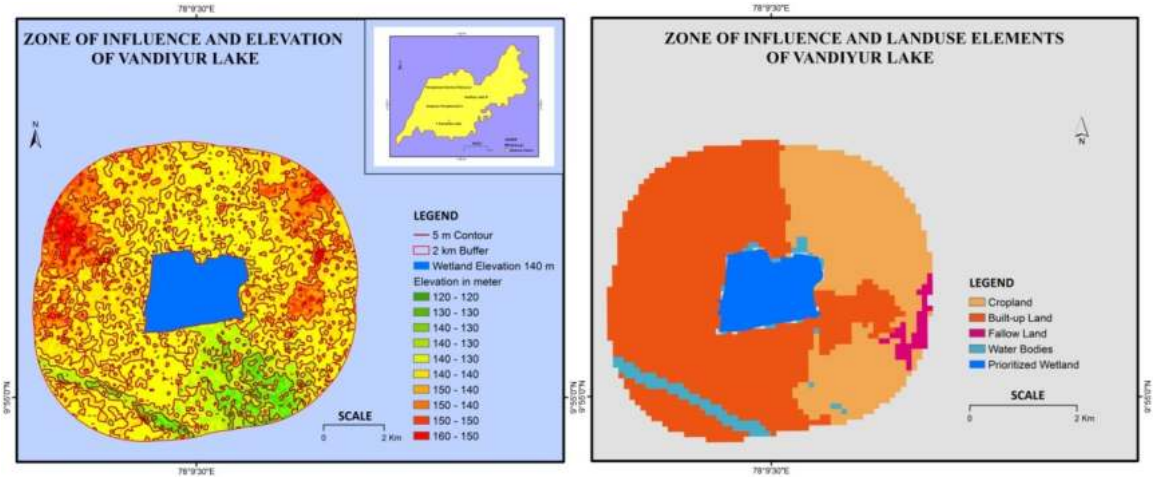
Table 13.10h: List of Mammals recorded along the Vandiyur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cow | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 13.8: Comparative Google imagery for Vandiyur Lake**




**Map 13.9: The zone of influence around the Vandiyur Lake.**



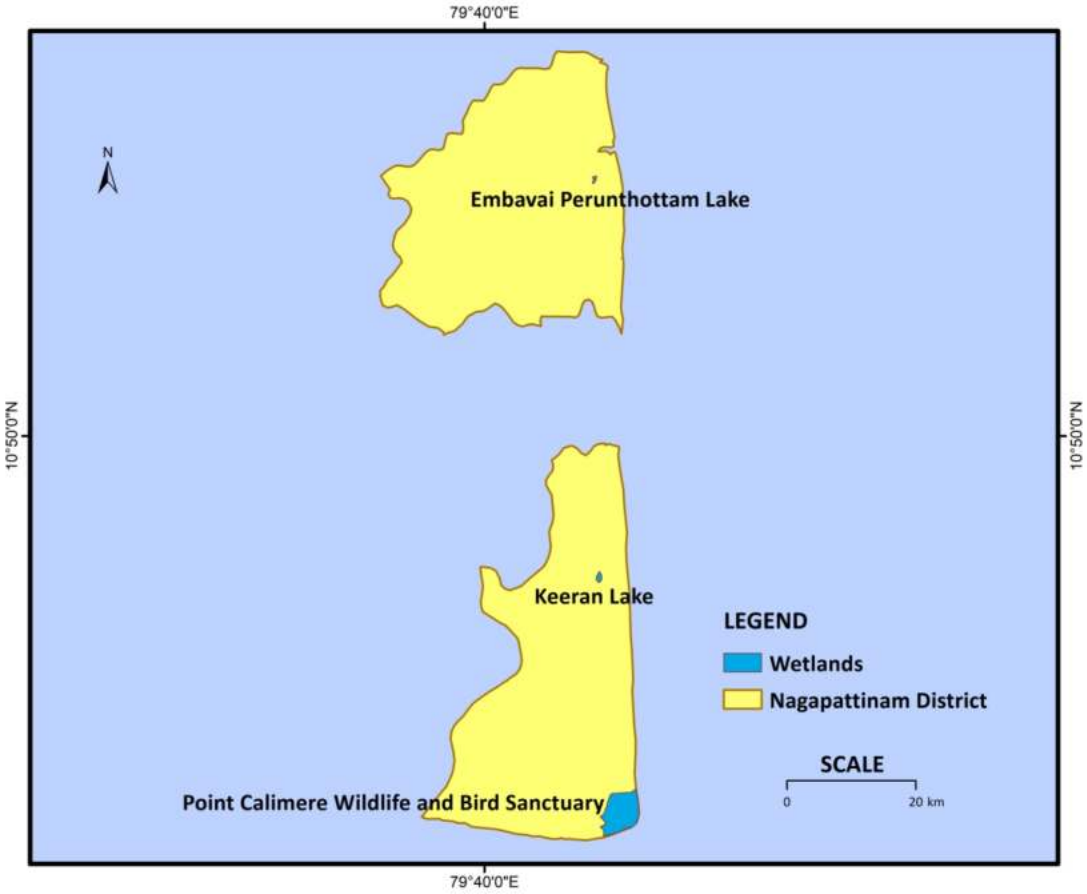
## 14. Nagapattinam District

### 1. Introduction

Nagapattinam is a coastal district carved out of the composite Thanjavur district in 1991. It has a coastline that is 187 kms long. The district shares common boundary with Cuddalore district on the North, Thanjavur district on the west, Tiruvarur district on the south and Bay of Bengal on the East. The district is also an important pilgrimage centre for the Hindus, Muslims and Christians.

Total geographic area of Nagapattinam is 2715.83 km². Total area under wetland is 47833 ha, which includes 376 small wetland (<2.25 ha). Major wetland types of the district are; Inter-tidal mudflats (11868 ha), Lagoons (6362 ha), Man-made waterlogged (8499 ha), River/Stream (4646 ha). Other important wetland areas are Mangroves (2813 ha) and aquaculture ponds (4129 ha).

SACON during 2004 had prioritized one wetland form Nagapattinam district for conservation based on the wildlife, avian diversity and the ecosystem services provided by the wetland. To prepare the brief document we selected two wetlands to assess its present potential for conservation. (Map14.1). The other two wetlands were selected based on its area and importance to the local villagers, as well as based on google imagery.




**Map 14.1: Wetlands of Nagapattinam District Assessed for Prioritization**

**Observations**

Of the three wetlands selected in the district, Point Calimere Wildlife & Bird Sanctuary is the largest while EmbavaiPerunthottam lake is the smaller of the three wetlands. Around the three wetlands, we recorded 92 plant species both aquatic and terrestrial including 14 invasive species (Table 14.1). The faunal components totaled 120 species with the representation of 54 bird species including the wetland birds. The Embavai Perunthottam Lake was Mesotrophic while the other two wetlands were oligotrophic in status (Table 14.2). Point Calimere is a dynamic marine ecosystem.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species, in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Keeran Lake
2. Ebavai Perunthottam Lake
3. Point Calimere Wildlife and Bird Sanctuary

Table14.1: The flora and fauna recorded form the wetlands of Nagapattinam District

| S. No | Name of the Wetland | Plants | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Point Calimere Wildlife and Bird Sanctuary | 22(5) | 4 | 4 | 10 | 3 | 19 | 0 | 1 | 35 | 8 |
| 2 | Keeran Lake | 37(10) | 2 | 3 | 6 | 2 | 9 | 0 | 1 | 27 | 1 |
| 3 | EmbavaiPerunthottam Lake | 60(8) | 4 | 5 | 3 | 0 | 8 | 0 | 0 | 22 | 0 |
| | | 92(14) | 8 | 7 | 13 | 3 | 26 | 0 | 1 | 54 | 8 |

Table14.2: The water and soil quality assessed form the wetlands of Nagapattinam District

| District Name | Nagapattinam | | |
|---|---|---|---|
| Wetland Name | Point Calimere Wildlife and Bird Sanctuary | Keeran Lake | Embavai Perunthottam Lake |
| Wetland Area (ha) | 2968 | 96.9 | 45.4 |
| Buffer Area in Hectare (ha) | 5745.31 | 2098.9 | 1915.43 |
| Air Temperature °C | 29 | 38 | 33.1 |
| Water Temperature °C | 27.8 | 29.1 | 31.6 |
| Humidity % | 61 | 64 | 55 |
| Nutrients in Water | Oligotrophic | Oligotrophic | Mesotrophic |
| Water pH | 7.5 | 8.3 | 8.6 |
| Water TDS ppm | 4236 | 456 | 232 |
| Water Conductivity ppm | 2750 | 350 | 334 |
| Light Penetration cms | 33 | 56 | 35 |
| Water Salinity ppt | 7.207 | 0.461 | 0.149 |
| DO mg/L | 4.88 | 6.30 | 6.10 |
| PO4P mg/L | 0.112 | 0.004 | 0.024 |
| Water Na ppm | 6180 | 110.8 | 179.9 |
| Water K ppm | 210 | 5 | 3 |
| Water Li ppm | 3.4 | 0.1 | 0.1 |
| Water Ca ppm | 2110 | 35.1 | 56.1 |
| Soil Colour code | 10YR 4/3 | 2.5Y 6/6 | 7.5YR 5/3 |
| Soil Colour | Brown | Olive Yellow | Brown |
| Soil pH | 7.61 | 7.37 | 7.49 |
| Soil TDS ppm | 3.01 | 120 | 84.9 |
| Soil Conductivity ppm | 4250 | 168.3 | 119.5 |
| Soil Salinity ppt | 2.24 | 0.084 | 0.061 |
| Soil Na ppm | 716 | 20.5 | 14.7 |
| Soil K ppm | 44.6 | 2.5 | 4.5 |
| Soil Li ppm | 0 | 0 | 0 |
| Soil Ca ppm | 93.3 | 9 | 6 |

**Embavi Perunthottam Lake**

**Lake Survey Number:** 26, 65,111, 229, 230, 231, 234 (1),

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Embavi-Perunthottam Lake (Plate 34) also known as Perunthottam Lake.

1.2 Villages that surround the wetland include Triuvenkadu, Embavi, Perunthottam, Chinna-Perunthottam.

1.3 & 1.4 The lake is based in Sirkali taluka in Nagapattinam District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 11'39.3" N; 11° 11'42.7" N; 11° 11'46.7" N; and Longitude: 079° 49'01.6" E; 079° 49'04.9" E; 079° 49'20.5" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Nagapattinam division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 45.4 hectares (Map 14.2).

2.2 The Wetland type - the wetland belongs to the Manmade (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 4 to 5 meters for the wetland.

2.4 The elevation of the wetland is 4 to 17 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and Cauvery water.
b) The water in the wetland is intermitent nature with some water is present only for a few months after the rains, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields and some to the Bay of Bengal.
d) The pH of the water was 8.6.
e) The lake has estuarine water as salinity recorded was 0.149 ppt.
f) The wetland had vegetation like salt tolerant grass, *Ipomoea, Prosopis* and other weeds that dominated the landscape almost 40%.

2.6 Climatic setting

a) Rainfallfor the month of February, 2018 in Nagapattinam was 0.0 mm.
b) The atmospheric temperature varied between 32.5 and 33.1°C and the humidity was 48 and 55 %

2.7 The area of zone of influence is 1915.43 hectares with a fixed buffer area of 2 kms around the wetland (Map 14.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/ScrubLand 0%; |
| Agricultural lands 70 %; | Settlements (Rural) 30%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2003 and 2018 is given in Map 14.2& 14.3.

**Section III- Biodiversity**

3.1 List of Plant species: 59 species of plants were recorded around the wetland during our visit (Table 14.3).

3.2 List of animal species: 42 animal species were recorded during the survey (Table 14.4a-e)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 14.4a-e)

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Ipomoea sp.*formed one of the major vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The Local Panchayat provides drinking water from the borewell water at regular intervals and Koildam water that is used by the locals to fulfill their daily requirements.
4.2 There are farmlands where agriculture is undertaken around the wetland that use the wetland waters.
4.3 Fishery is not undertaken, Bird hunting is undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any other purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area.
4.10 There are temples or religious structures around the wetland bank. There are high tension wires passing through the wetland.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species and evidence of bird hunting during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 There is agriculture around the wetland.
5.4 Grazing by the cattle are undertaken.
5.5 There is withdrawal of water for agriculture.
5.6 The wetland was desilted twoyears ago that has increased the water retention capacity of the wetland.
5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the agriculture practices and its location besides the state highway.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form encroachment and land use change gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned road development and increasing agriculture needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Published Literature available for Ebavai Perunthottam Lake

Table 14.3: List of Plants recorded along the Ebavai Perunthottam Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Abelmoschus angulosus* | --- | KattuSemparuthi | Malvaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 7 | *Sida rhombifolia* | Cuban jute, Jelly leaf, | Kurundotti | Malvaceae | Native | |
| 8 | *Thespesia populnea* | Indian tulip tree | Puvarasumaram | Malvaceae | Native | LC |
| 9 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 10 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 11 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 12 | *Mangifera indica* | Mango | Ma | Anacardiaceae | Native | DD |
| 13 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 14 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 15 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 16 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 17 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 18 | *Vigna trilobata* | Three lobe leaf cowpea | | Fabaceae | Native | NA |
| 19 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 20 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 21 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 22 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 23 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 24 | *Oldenlandiaum bellata* | Chay Root, Indian madder | Chayam, Imbura-ver | Rubiaceae | Native | |
| 25 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 26 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 27 | *Madhucalongifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 28 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 29 | *Catharanthus roseus* | Periwinkle, Vinca | | Apocynaceae | Introduced | NA |
| 30 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 31 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 32 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 33 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 34 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 35 | *Solanum nigrum* | Black nightshade,Poison berry | Manathakkali | Solanaceae | Native | NA |
| 36 | *Pedalium murex* | Large caltrops | Yanainerunji,Perunerunji | Pedaliaceae | Native | NA |
| 37 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, | Martyniaceae | Native | NA |
| 38 | *Barleria acuminata* | Long-flower Barleria | VellaiKurinji | Acanthaceae | Native | NA |
| 39 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 40 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 41 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 42 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 43 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 44 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 45 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 46 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 47 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 48 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 49 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhandlli | Phyllanthaceae | Native | NA |
| 50 | *Ficus amplissima* | Yellow barked fig | | Moraceae | Native | NA |
| 51 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 52 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 53 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 54 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 55 | *Fimbristylis dichotoma* | | | Cyperaceae | Native | LC |
| 56 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 57 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 58 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 59 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 14.4a: List of Insects recorded along the Ebavai Perunthottam Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 3 | Golden backed Ant (Red Marph) | *Camponotus sericeus* | Formicidae |
| 4 | Spider Wasp | *Pompilidae sp.* | Pompilidae |

Table 14.4b: List of Butterflies recorded along the Ebavai Perunthottam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |

Table 14.4c: List of Odonates recorded along the Ebavai Perunthottam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 14.4d: List of Fishrecorded form the Ebavai Perunthottam Lake

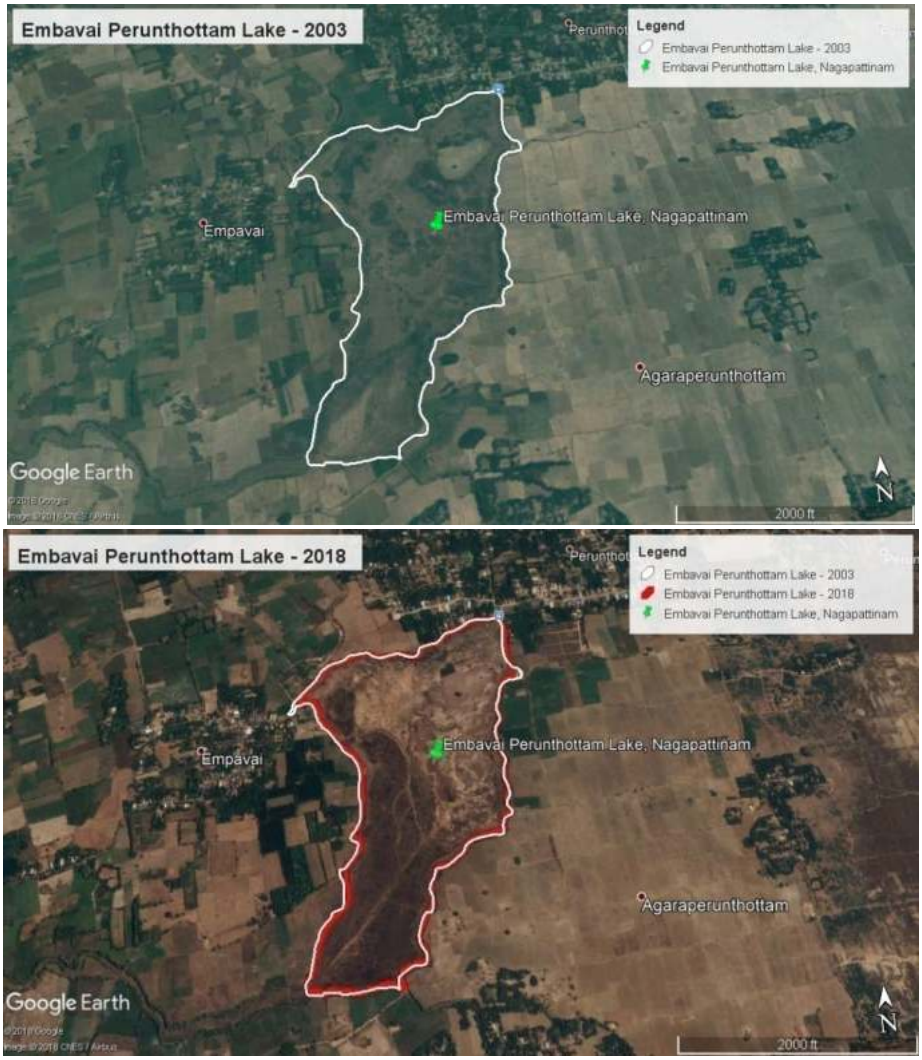
| S. No | Scientific Name | Common Name | Local Name | | Family |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 5 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 6 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 7 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 8 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

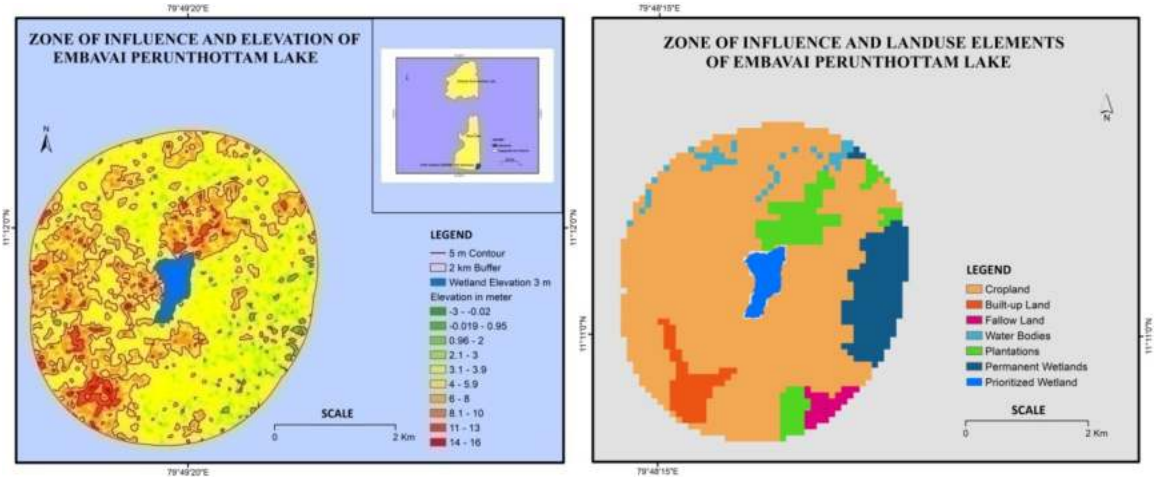
Table 14.4e: List of Birds recorded along the Ebavai Perunthottam Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Cinnamon Bittern | *Ixobrychus cinnamomeus* | Ardeidae | Least Concern |
| 3 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 4 | Black-winged Kite | *Elanus caeruleus* | Accipitridae | Least Concern |
| 5 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 6 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 7 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 8 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 9 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 10 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 11 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 12 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 13 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 14 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 15 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 16 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 17 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 18 | Red-rumped Swallow | *Cecropis daurica* | Hirundinidae | Least Concern |
| 19 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 20 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 21 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 22 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |

**Map 14.2: Comparative Google imagery for Embavai Perunthottam Lake**




**Map 14.3: The zone of influence around the Embavai Perunthottam Lake**



**Keeran Lake**

**Lake Survey Number:** 76, 44/1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Keeran Lake also known as Thirumpoondi Lake (Plate 34).

1.2 Villages that surround the wetland include Thirumpoondi, Kameshwaram, Prathamaramapuram.

1.3 & 1.4 The lake is based in Nagapattinam District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 37'55.0" N; 10° 38'00.5" N; 10° 38'15.3" N; 10° 38'15.5" N; and Longitude: 079° 49'26.6" E; 079° 49'20.7" E; 079° 49'22.9" E; 079° 49'26.7" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Nagapattinam division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 96.9 hectares (Map 14.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 4 to 10 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is intermitent nature with some water is present only for a few months after the rains, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields and some to the Bay of Bengal.
d) The pH of the water was between 8.1 and 8.3.
e) The lake has estuarine water as salinity recorded was 0.461ppt.
f) The wetland was completely dry and the aquatic vegetation like salt tolerant grass, *Ipomoea, Prosopis* and other weeds dominated the landscape almost 40%.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Nagapattinam was 0.0 mm.
b) The atmospheric temperature varied between 31.3 and 33.0 °C and the humidity was 53 and 64 %

2.7 The area of zone of influence is 2098.9 hectares with a fixed buffer area of 2 kms around the wetland (Map 14.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/ScrubLand 15%; |
| Agricultural lands 80 %; | Settlements (Rural) 5%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2006 and 2017 is given in 14.4 & 14.5.

**Section III- Biodiversity**

3.1 List of Plant species: 36 species of plants were recorded around the wetland during our visit (Table 14.5).

3.2 List of animal species: 51 animal species including one domestic species were recorded during the survey (Table 14.6a-h).

3.3 Species of Conservation importance: Two Threatened species of birds and fish were observed during the survey (Table 14.6a-h).

3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Accacia nilotica indica*, and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion - no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The Local Panchayat provides drinking water formthe borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The are farmlands where agriculture is undertaken around the wetland that use the wetland waters.
4.3 Fishery is not undertaken, Bird hunting is undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any other purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area.
4.10 There are no temples or religious structures around the wetland bank. There is high tension wires passing through the wetland.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species and evidence of bird hunting during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 There is agriculture around the wetland.
5.4 Grazing by the cattle is undertaken
5.5 There is withdrawal of water for agriculture.
5.6 The wetland was desilted twoyears ago that has increased the water retention capacity of the wetland.
5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the agriculture practices and its location besides the state highway.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form encroachment and land use change gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned road development and increasing agriculture needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Keeran Lake**

There is no scientific literature available for the wetland.

Table 14.5: List of Plant species recorded along the Keeran Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 2 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 3 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 4 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 5 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 6 | *Barringtoniaacutangula* | Freshwater Mangrove, | Aram, Kadambu, Kadappai, | Lecythidaceae | Native | |
| 7 | *Turner asubulata* | White Alder | | Turneraceae | Invasive | NA |
| 8 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 9 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 10 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 11 | *Morinda coreia* | Indian Mulberry | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 12 | *Oldenlandiaum bellata* | Chay Root, Indian madder, | Chayam, Emboorel | Rubiaceae | Native | |
| 13 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 14 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 15 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 16 | *Asclepias curassavica* | Scarlet Milkweed, | | Apocynaceae | Naturalized | |
| 17 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 18 | *Evolvulus alsinoides* | Dwarf morning glory, | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 19 | *Solanum elaeagnifolium* | Silverleaf nettle | | Solanaceae | Invasive | NA |
| 20 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 21 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 22 | *Barleria cuspidata* | Spiny Barleria, | Mancat-cemmulli | Acanthaceae | Native | |
| 23 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 24 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 25 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 26 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 27 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 28 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 29 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 30 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 31 | *Breyniavitis-idaea* | Mountain Coffee Bush | | Phyllanthaceae | Native | NA |
| 32 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 33 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 34 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 35 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 36 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 14.6a: List of Insects recorded along the Keeran Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 14.6b: List of Butterflies recorded along the Keeran Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 4 | Dark Grass Blue | *Zizeeria karsandra* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 6 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 14.6c: List of Dragonflies recorded along the Keeran Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 14.6d: List of Arachnida recorded along the Keeran Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 14.6e: List of Fishes recorded form the Keeran Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 9 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 14.6f: List of Reptiles recorded along the Keeran Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 14.6g: List of Birds recorded along the Keeran Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 6 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 11 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 12 | Osprey | *Pandion haliaetus* | Pandionidae | Least Concern |
| 13 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 14 | Yellow-wattled Lapwing | *Vandllus malabaricus* | Charadriidae | Least Concern |
| 15 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 16 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 17 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 18 | Pallas's Gull | *Ichthyaetus ichthyaetus* | Laridae | Least Concern |
| 19 | Caspian Tern | *Hydroprogne caspia* | Laridae | Least Concern |
| 20 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 21 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 22 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 23 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 24 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 25 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 26 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 27 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 14.6h: List of Mammals recorded along the Keeran Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |

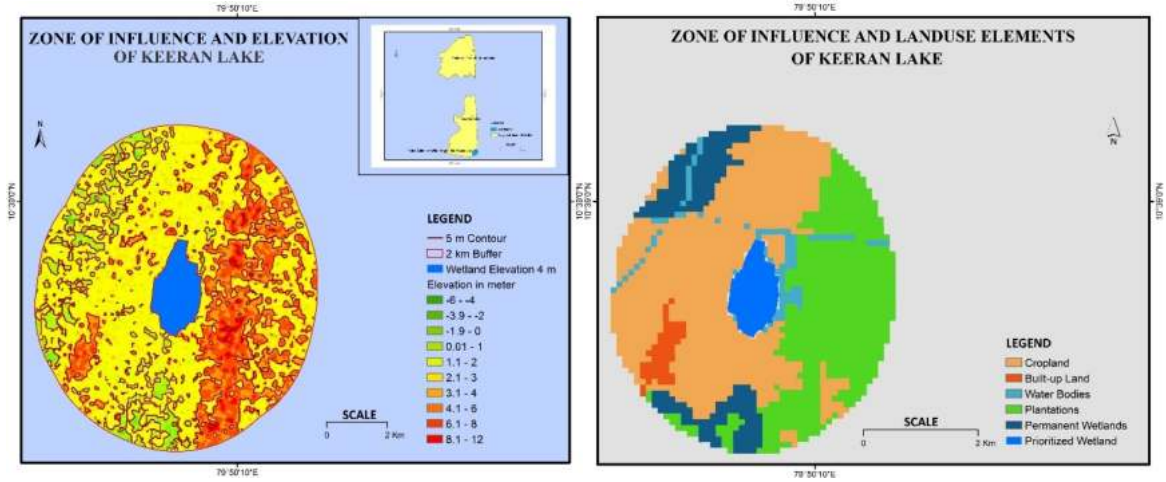
**Map 14.4: Comparative Google imagery for Keeran Lake**







**Map 14.5: The zone of influence around the KeeranLake.**



**Point Calimere Wildlife and Bird Sanctuary**

The Point Calimere Wildlife and Bird Sanctuary, with an area of 24.17 $km^2$, was created on June 13, 1967. The sanctuary includes the cape and its three natural habitat types: dry evergreen forests, mangrove forests, and wetlands. In 1988, the sanctuary was enlarged to include the Great Vedaranyam Swamp and the Talaignayar Reserve Forest, and renamed the Point Calimere Wildlife and Bird Sanctuary, with a total area of 377 $km^2$.

**Lake Survey Number**: Not Provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Point Calimere Bird Sanctuary (Plate 35).

1.2 Villages that surround the wetland include Kodiyakadu and Kodiyakarai.

1.3 & 1.4 The lake is based in Nagapattinam District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 17'06.7" N; 10° 17'20.8" N; 10° 17'24.9" N; 10° 17'34.3" N; 10° 17'07.0" N; 10° 18'27.5" N; and Longitude: 079° 50'17.3" E; 079° 51'35.7" E; 079° 52'06.9" E; 079° 52'01.6" E; 079° 51'01.4" E; 079° 50'00.9" E;

1.6 The wetland is a Protected Area and a Ramsar Site.

1.7 The wetland comes under the jurisdiction of PWD Nagapattinam division..

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the approximate area of the wetland as 2968 hectares (Map 14.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland & Coastal) category in the sub category permanent lake.

2.3 Based on the secondary information the average depth is 3.0 meters for the wetland.

2.4 The elevation of the wetland is 5 to 32 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is the tidal waters from the Bay of Bengal, rainfall, groundwater, the surrounding runoff form the catchment area.

b) The water in the wetland is mostly of intermittent nature, as the wetland is mostly dependant on the tidal waters, rainfall and runoff waters.

c) The water also helps in replenishing the groundwater.

d) The pH of the water was observed to be alkaline and recorded up to 7.5.

e) The lake has fresh water with the salinity recorded at 7.207 ppt at the time of sampling.

f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have blooms of plankton.

2.6 Climatic setting

a) Rainfallfor the month of February in Nagapattinam was 0.0 mm.

b) The atmospheric temperature was 29°C and the humidity was 61 %

2.7 The area of zone of influence 5745.34 hectares with a fixed buffer area of 2 kms around the wetland (Map 14.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Mangrove forest 30%; | Grassland, 55%; |
| Agriculture 10%; | Settlements (rural) 5%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2009 and 2017 is given in Map 14.6 & 14.7.

**Section III- Biodiversity**

3.1 List of Plant species: 22 species of plants were recorded around the wetland during our visit ( Table 14.7).

3.2 List of animal species: 84 animal species including 2 domestic species were recorded during the survey (Table 14.8a-h)

3.3 Species of Conservation importance: Three near Threatened species of birds were observed during the survey (Table 14.8a-h)

3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* formed nearly 10 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: We did not record any invasive faunal species during our visit.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose as the water is marine.

4.2 Agriculture is not undertaken around and within the wetland.

4.3 Fishery is undertaken without any permitsson in the lake, recreational fishery is also practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland attracts a large number of tourist, it being a Bird sanctuary, a Ramsar site as well as a wetland of National Importance.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments.

4.10 The wetland does not have any several temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.

4.11 The site is only majorly used by walkers and the skating track.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a vast diversity of fishery and the commercial fishery is practiced by the local community as there is also a fishers union.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken.

5.2 There is agriculture not undertaken within the wetland.

5.3 Agriculture is not undertaken around the wetland, except for outside the sanctuary.

5.4 Grazing by the cattle is undertaken.

5.5 There is no withdrawal of water for agriculture.

5.6 The wetland is used for bathing by livestock as well as the wild animals including the feral horses.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The pollution in the form of aquaculture and saltpans waste water is is seen but it is low threat in its present condition.

6.3 There is organized fishing activity and a proper fishers union exists.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland has some amount of solid waste dumping and encroachment activities.

**Section VII Notification Category**

The wetland is a bird sanctuary, a ramsar site and a wetland of National importance and protected for conservation and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed outside the sanctuary. The tourism activities need to be regulated and educated on the behavior in the sanctuary area.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The tourism activities although essential need to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Point Calimere Wildlife & Bird Sanctuary


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Table 14.7: List of Plant species recorded along the Point Calimere Wildlife and Bird Sanctuary

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 3 | *Albizia saman* | Rain Tree | Thoongumoonjimaram | Fabaceae | Exotic | NA |
| 4 | *Alysicarpus vaginalis* | Alysiclover | | Fabaceae | Native | NA |
| 5 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 6 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 7 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 8 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 9 | *Sesuvium portulacastrum* | Sea pursland,Shore pursland | Vankaravacci | Aizoaceae | Native | NA |
| 10 | *Alangium salviifolium* | Sage leaved Alangium | Alandi | Cornaceae | Native | NA |
| 11 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 12 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 13 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 14 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 15 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 16 | *Avicennia marina* | Indian Mangrove,White Mangrove | Venkantal | Acanthaceae | Native | LC |
| 17 | *Clerodendruminerme* | Glory Bower | Sangam, Anjali | Lamiaceae | Native | NA |
| 18 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 19 | *Salicornia brachiata* | | | Amaranthaceae | Native | |
| 20 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 21 | *Perotis indica* | *Indian comet grass* | Narival,Kudiraivalpullu,thop paraipullu | Poaceae | Native | NA |
| 22 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 14.8a: List of Insects recorded along the Point Calimere Wildlife and Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 4 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 14.8b: List of Butterflies recorded along the Point Calimere Wildlife and Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 5 | Pea Blue | *Lampidesboeticus* | Polyommatinae | Common |
| 6 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 7 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 8 | Common Crow | *Euploea core* | Danainae | Common |
| 9 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 10 | Heliotrope Moth | *Utetheisa pulchelloides* | Erebidae | Common |

Table 14.8c: List of Dragonflies recorded along the Point Calimere Wildlife and Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 4 | Black Marsh Trotter | *Tramea limbata* | Libellulidae | Common |

Table 14.8d: List of Arachnida recorded along the Point Calimere Wildlife and Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |
| 3 | Spiny orb-weaver | *Gasteracantha sp.* | Arandidae |

Table 14.8e: List of Fishes recorded form the Point Calimere Wildlife and Bird Sanctuary

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 2 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 3 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 4 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 5 | *Anabas testudineus* | Climbing erch | Panangottaimeen, Payonerikendaimeen | Anabantidae | DD |
| 6 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |
| 7 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 8 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |
| 9 | *Stolephorus commersonii* | Commerson's anchovy | Nethili | Engraulidae | NE |
| 10 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 11 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 12 | *Notopterus notopterus* | Featherback | Chottavaalaimeen | Notopteridae | LC |
| 13 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |
| 14 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |
| 15 | *Sphyraena barracuda* | Great barracuda | Seelameen | Sphyraenidae | LC |
| 16 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 17 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 18 | *Uca annulipes* | Fiddler crab | Nandu | Ocypodidae | |
| 19 | *Periophthalmus argentilineatus* | Mudskipper | Paravettimeen | Oxudercidae | |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 14.8f: List of Reptiles recorded along the Point Calimere Wildlife and Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 14.8g: List of Birds recorded along the Point Calimere Wildlife and Bird Sanctuary

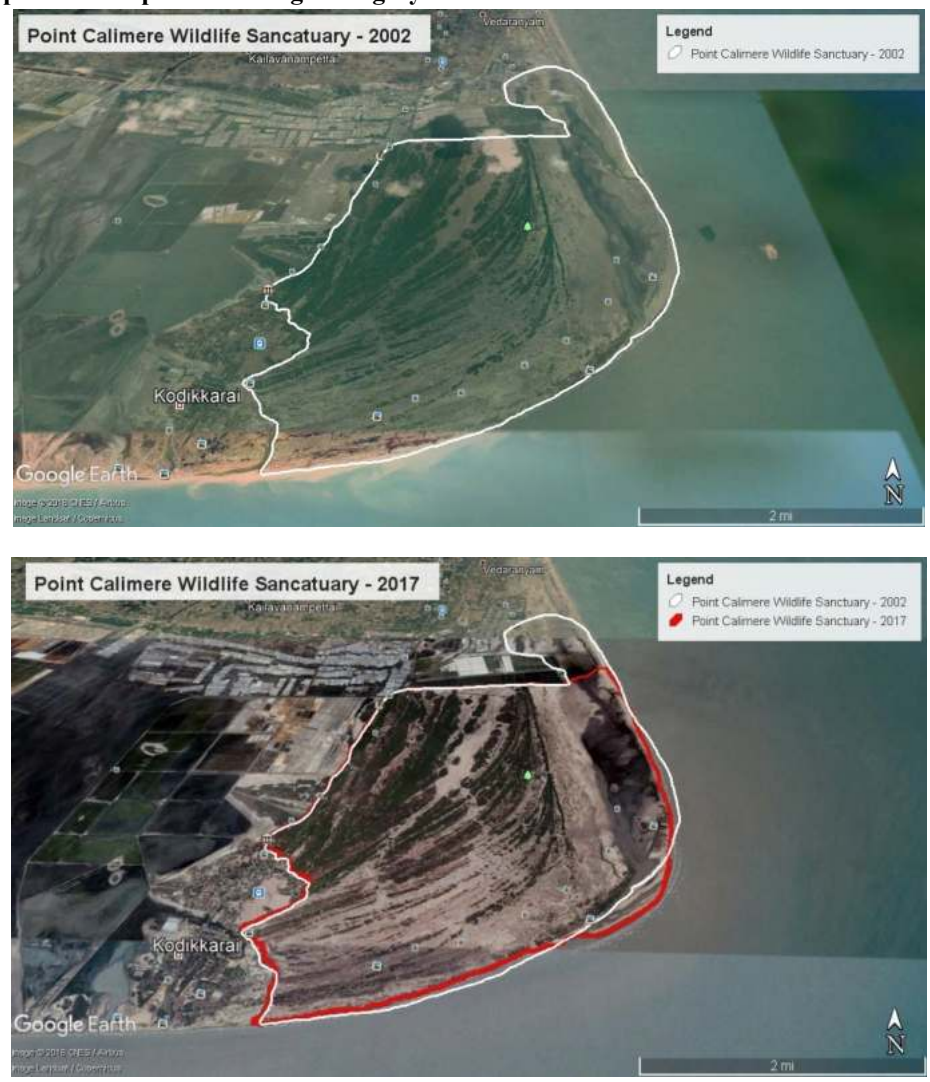
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Peregrine Falcon | *Falco peregrinus* | Falconidae | Least Concern |
| 12 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 13 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 14 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 15 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 16 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 17 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 18 | Gull-billed Tern | *Gelochelidonnilotica* | Laridae | Least Concern |
| 19 | Caspian Tern | *Hydroprogne caspia* | Laridae | Least Concern |
| 20 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 21 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 22 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 23 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 24 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 25 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 26 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 27 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 28 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 29 | Oriental skylark | *Alauda gulgula* | Alaudidae | Least Concern |
| 30 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 31 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 32 | Rosy Starling | *Pastor roseus* | Sturnidae | Least Concern |
| 33 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 34 | Indian Silverbill | *Euodice malabarica* | Estrildidae | Least Concern |
| 35 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |

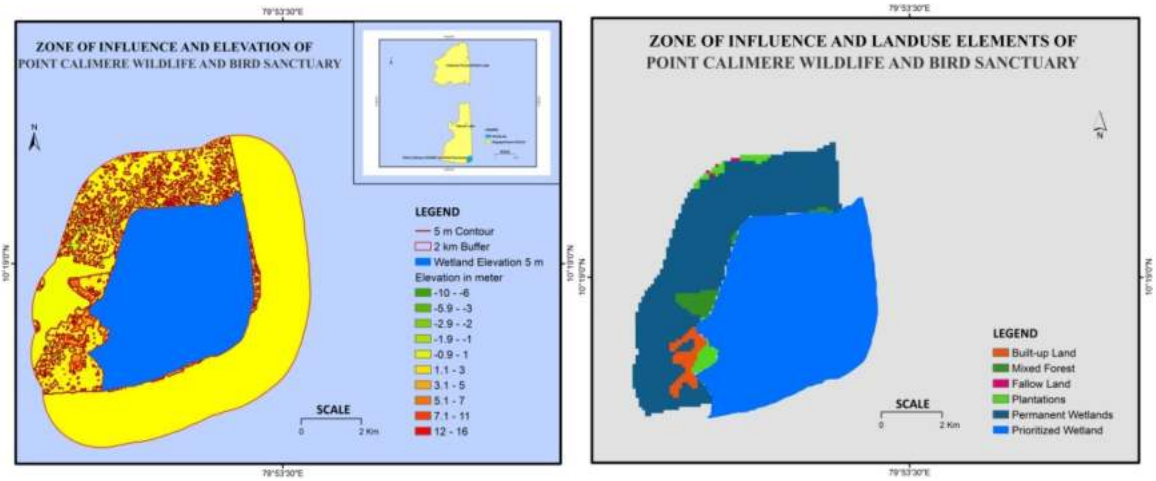
Table 14.8h: List of Mammals recorded along the Point Calimere Wildlife and Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |
| 4 | Horse | *Equus feruscaballus* | Equidae | Feral |
| 5 | Indian grey Mongoose | *Herpestes edwardsi* | Herpestidae | Least Concern |
| 6 | Blackbuck | *Antilope cervicapra* | Bovidae | Least Concern |
| 7 | Bonnet Macaque | *Macaca radiata* | Cercopithecidae | Least Concern |
| 8 | Wild Boar | *Sus scrofa* | Suidae | Least Concern |

**Map 14.6: Comparative Google imagery for Point Calimere Wildlife and Bird Sanctuary**




**Map 14.7: The zone of influence around the Point Calimere Wildlife and Bird Sanctuary.**



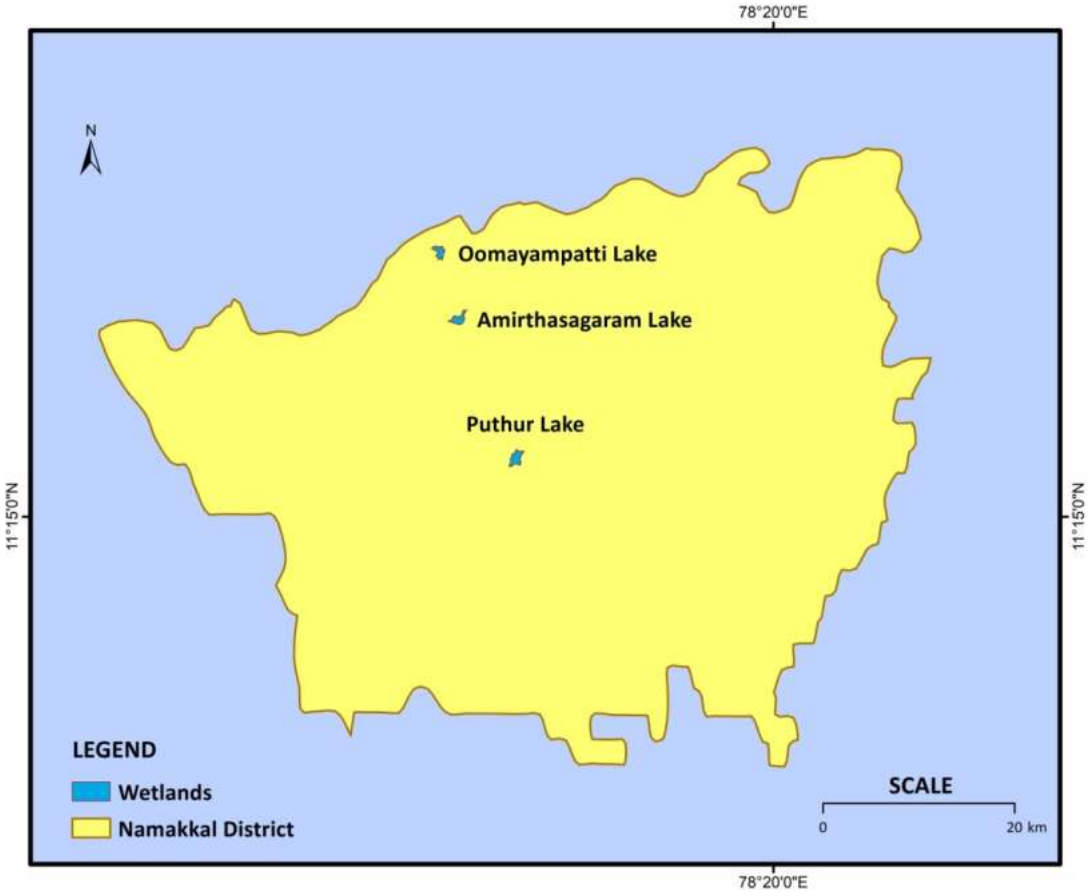
## 15. Namakkal District

### 1. Introduction

Namakkal is bounded on the north by Salem district, on the east by Attur taluk of Salem district, Perambalur and Tiruchirapalli districts, on the south by Karur district and on the west by Erode district. The district is extensively covered with hilly ranges and rocks with undulatory plains. The Kollimalai range with peaks 1219 metres runs along the east of Nammakkal and Rasipuram taluks. Namakkal District comes under the North Western Agro climatic zone of Tamil Nadu. It is situated in the dividing portion of two watersheds between Cauvery and the Vellar System. The main source of revenue form the forests is form the Sandalwood trees which occur naturally in abundance in the plateau and hilly ranges.

Total geographic area of Namakkal is 3363 km². Total area under wetland is 7687 ha which includes 163 small wetland (<2.25 ha). Major wetland types of the district are Tanks/ponds, Rivers/stream and Lakes/ponds.

The wetland for the prepration of brief document was selected based on its area and its significance to the locals (Map 15.1). The other two wetlands were selected based on the google imagery and the bird recordings on the internet portals.




**Map 15.1: Wetlands of Namakal district assessed for Prioritization**

**Observations**

Of the three wetlands selected in the district, Puthur is the largest while Ooyampatti is the smaller of the three wetlands. Around the three wetlands, we recorded 62 plant species both aquatic and terrestrial including 13 invasive species (Table 15.1). The faunal components totaled 86 species with the representation of 35 bird species including the wetland birds. The field study revealed that OomyampattiLake was Eutrophic While Amrithasagaram was Oligotrophic in status and Puthur was a dry wetland (Table 15.2). The soil soil characteristics of Puthur showed hydric properties though there are several disturbances in the wetland. The soil of Oomayampatti was not accessible.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Oomayampatti wetland. Mining of lake sediments was a major threat in two of the three wetlands as Oomayampattifaced the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Puthur Lake
2. Oomayampatti Lake
3. Amrithasagaram Lake

Table 15.1: The water and soil quality assessed form the wetlands of Namakkal District

| S. No | Name of the Wetland | Plants | Other Arthropods | Odonata | Lepidoptera | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Oomayampatti Lake | 47(11) | 7 | 3 | 7 | 11 | 0 | 2 | 20 | 5 |
| 2 | Amirthasagaram Lake | 21(3) | 5 | 5 | 10 | 5 | 0 | 2 | 24 | 3 |
| 3 | Puthur Lake | 17(2) | 1 | 2 | 1 | 0 | 0 | 1 | 6 | 0 |
| | Total | 62(13) | 11 | 6 | 14 | 12 | 0 | 3 | 35 | 5 |

Table 15.2: The water and soil quality assessed form the wetlands of Namakkal District

| **District Name** | Namakkal | | |
|---|---|---|---|
| **Wetland Name** | Puthur Lake | Oomayampatti Lake | Amirthasagaram Lake |
| **Wetland area (ha)** | 147 | 102 | 115 |
| **Buffer Area in Hectare (ha)** | 2389.77 | 2224.32 | 2401.77 |
| **Air Temperature °C** | 37 | 35.1 | 36.4 |
| **Water Temperature °C** | | 30.5 | 30.1 |
| **Humidity %** | 37 | 42 | 45 |
| **Nutrients in Water** | not known | Eutrophic | Oligotrophic |
| **Water pH** | | 8.7 | 8.85 |
| **Water TDS ppm** | | 1277 | 2090 |
| **Water Conductivity ppm** | | 1385 | 2920 |
| **Light Penetration cms** | | 34 | 53 |
| **Water Salinity ppt** | | 1.178 | 0.151 |
| **DO mg/L** | | 3.05 | 1.02 |
| **PO4P mg/L** | | 0.000 | 0.172 |
| **Water Na ppm** | | 262 | 282 |
| **Water K ppm** | | 23.1 | 15.5 |
| **Water Li ppm** | | 0.3 | 0.3 |
| **Water Ca ppm** | | 60.8 | 103.2 |
| **Soil Colour code** | 7.5YR 6/8 | | 7.5YR 5/4 |
| **Soil Colour** | Reddish Yellow | soil was not accessible | Brown |
| **Soil pH** | 7.76 | | 7.79 |
| **Soil TDS ppm** | 266 | | 155 |
| **Soil Conductivity ppm** | 375 | | 219 |
| **Soil Salinity ppt** | 0.181 | | 0.105 |
| **Soil Na ppm** | 57.2 | | 20.2 |
| **Soil K ppm** | 3.7 | | 2.6 |
| **Soil Li ppm** | 0.1 | | 0 |
| **Soil Ca ppm** | 21.6 | | 8.5 |

**Amrithasagaram Lake**

**Lake Survey Number:**195

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Amrithasagaram Lake, Amritavelli eri (Plate 36).

1.2 Villages that surround the wetland include Paruthipalli, Marampalayam, Samavathupuram.

1.3 & 1.4 The lake is based in Trichingode taluka in Namakal district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 25'57.4" N; 11° 26'00.3" N; 11° 25'59.3" N; 11° 25'59.5" N; 11° 25'52.4" N; and Longitude: 078° 01'52.9" E; 078° 01'40.8" E; 078° 01'45.6" E; 078° 01'47.7" E; 078° 02'07.6" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 115 hectares (Map 15.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category Permanent tank.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 202 to 208 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area, and overflow of Tirummanimudhuru eri.
b) The water in the wetland is permanent in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow joins the agriculture fields and konniyareri.
d) The pH of the water was 8.8 to 8.85
e) The salinity of the lake was 0.151 ppt.
f) The wetland had aquatic vegetation like *Ipomoea, Prosopis juliflora, Lantna carnea*, grass sp.*Typha* sp. and other weeds that dominated the landscape i.e 70%.

2.6 Climatic setting

a) Rainfallfor the month of February 2018 in Namakal was 0.0 mm.
b) The atmospheric temperature was between 35.5 and 36.4°C and the humidity was 39 to 50 %

2.7 The area of zone of influence is 2401.77 hectares with a fixed buffer area of 2 kms around the wetland (Map 15.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2011 and 2018 is given inMap15.2 &15.3.

**Section III- Biodiversity**

3.1 List of Plant species: 19 species of plants were recorded around the wetland during our visit (Table 15.3).

3.2 List of animal species:54 animal species including 2 domestic species were recorded during the (Table 15.4a-g)

3.3 Species of Conservation importance: One Threatened species of birds was observed during the survey (Table 15.4a-g)

3.4 Major Plant invasive alien species and extent of invasion:Three invasive plants including *Prosopis juliflora*, *Typha sp*. and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for agriculture.
4.2 The overflow water feeds the agricultural lands and the Kundinyidaleri.
4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture and fish culture.
4.12 There are no agriculture activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken with the permission of the PWD in the absence of water.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure, encroachment and garbage dumping.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form the sewage release by the SALEM city municipal corporation that is making the water more saline.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The dumping of waste, sewage and effluents within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available for Amrithasagaram Lake

Table 15.3: List of Plants recorded along the Amrithasagaram Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 5 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 6 | *Leptopetalum biflorum* | | | Rubiaceae | Native | NA |
| 7 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 8 | *Heliotropium curassavicum* | Seaside Heliotrope, Wild heliotrope, Salt heliotrope | | Heliotropiaceae | Naturalized | LC |
| 9 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 10 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 11 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 12 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 13 | *Agave americana* | Agave, Century plant | | Asparagaceae | Introduced | |
| 14 | *Agave beauleriana* | | | Asparagaceae | Introduced | |
| 15 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 16 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 17 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 18 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 19 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 15.4a: List of Insects recorded along the Amrithasagaram Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 2 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |

Table 15.4b: List of Butterflies recorded along the Amrithasagaram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 4 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 6 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 7 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 8 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 9 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 10 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 15.4c: List of Odonates recorded along the Amrithasagaram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 5 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 15.4d: List of Arachnida recorded along the Amrithasagaram Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 15.4e: List of Fishes recorded form the Amrithasagaram Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 4 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 5 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 15.4e: List of Reptiles recorded along the Amrithasagaram Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

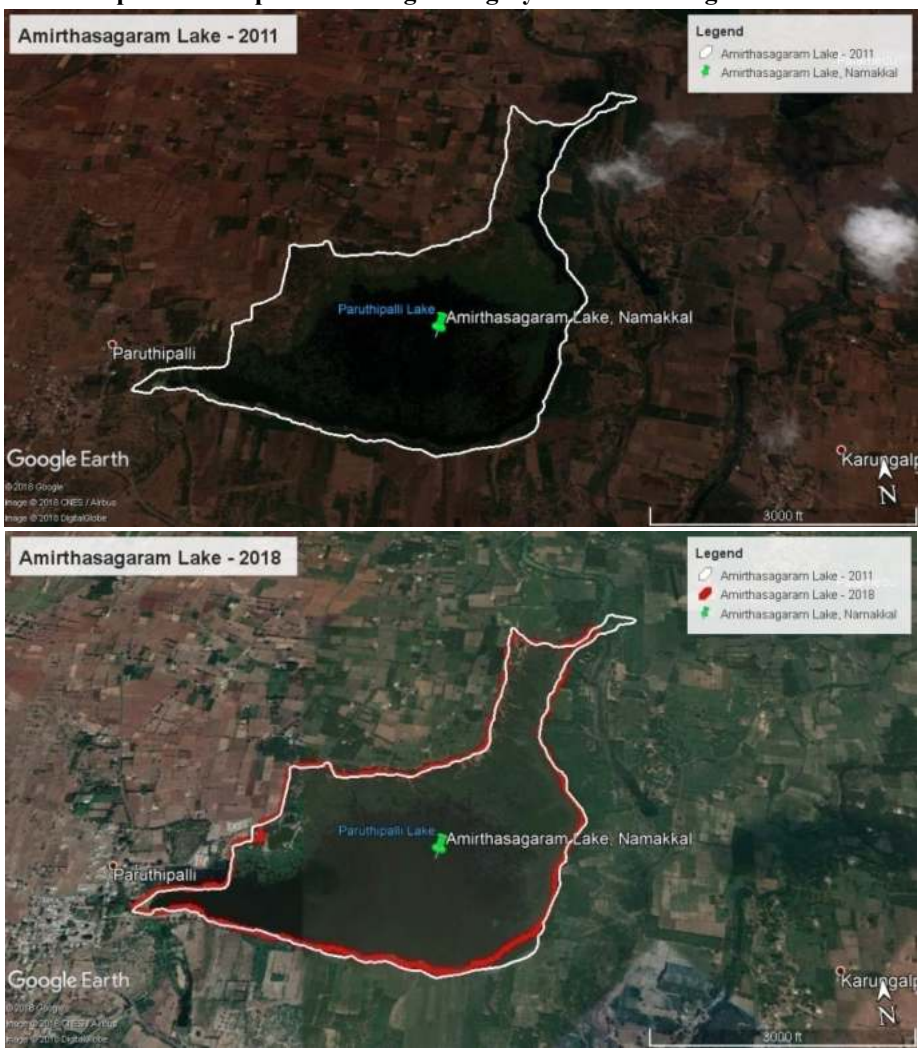
Table 15.4f: List of Birds recorded along the Amrithasagaram Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 12 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 13 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 14 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 15 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 16 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 17 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 18 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 19 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 20 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 21 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 22 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 23 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 24 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |

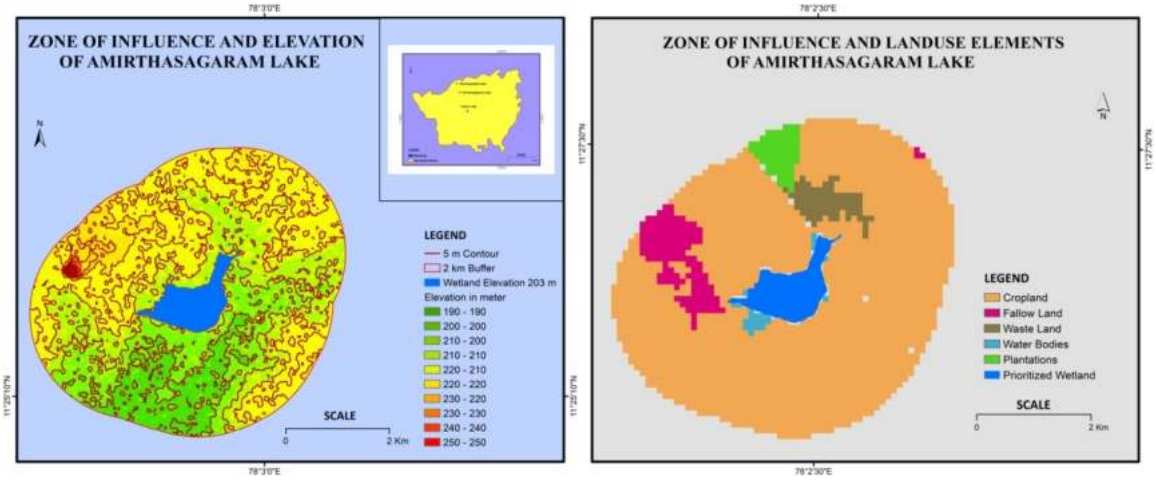
Table 15.4g: List of Mammals recorded along the Amrithasagaram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 15.2: Comparative Google imagery for Amrithasagaram Lake**




**Map 15.3: The zone of influence around the Amrithasagaram Lake.**



**Oomayampatti Lake**

**Lake Survey Number:**166

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as OomayampattiLake, Mallasamudhiram lake, Erikkadu Lake (Plate 36).

1.2 Villages that surround the wetland include Ooomyampatty, Mangalam, Pudur, Nathammedu, Uppupalayam, Suriyagoundampalayam andMallasamundram.

1.3 & 1.4 The lake is based in Namakal district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11°30'16.3" N; 11° 30'07.7" N; 11°30'05.6" N; 11°29'43.2" N; 11° 29'44.8"N;and Longitude: 078°01'22.6" E; 078°00'52.0" E; 078°00'57.1" E; 078°00'53.9" E; 078°00'59.9" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 102 hectares (Map 15.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 221 to 223 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area, and overflow of Mallasamudhiram chinna eri.
b) The water in the wetland is intermittent in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow joins the agriculture fields.
d) The pH of the water was 8.4.
e) The salinity of the lake was 1.178 ppt.
f) The wetland had *Ipomoea, Prosopis juliflora, Lantna camera,* grass sp. and other weeds that dominated the landscape i.e 70%.

2.6 Climatic setting

a) Rainfallfor the month of February 2018 in Namakal was 0.0 mm.
b) The atmospheric temperature was 38.8°C and the humidity was 34 %

2.7 The area of zone of influence is 2224.32 hectares with a fixed buffer area of 2 kms around the wetland(Map 15.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 40%; |
| Agricultural lands 40%; | Settlements (rural) 20%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2010 and 2017 is given in Map 15.4 & 15.4.

**Section III- Biodiversity**

3.1 List of Plant species:43 species of plants were recorded around the wetland during our visit ( Table 15.5).

3.2 List of animal species: 55 animal species including 4 domestic species were recorded during the survey (Table 15.6a-g).

3.3 Species of Conservation importance: Threatened species of birds were not observed but two threatened fish species were recorded during the survey (Table 15.6a-g).

3.4 Major Plant invasive alien species and extent of invasion: 11 invasive plants including *Prosopis juliflora*, *Accacia indica*, *Lantana camara* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion - invasive species Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for agriculture.
4.2 The overflow water feeds the agricultural lands.
4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture and fish culture.
4.12 There are agriculture activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken with the permission of the PWD.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure, encroachment and garbage dumping.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly due to solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The dumping of waste, sewage and effluents within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Oomayampatty Lake**

There is no published literature on the wetland.

Table 15.5: List of Plant species recorded along the OomayampattiLake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 11 | *Delonix elata* | White Gulmohar, White Poincian | Perungondrai, Vadanarayanan | Fabaceae | Native | LC |
| 12 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 13 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 14 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 16 | *Carica papaya* | Papaya Tree | Papalimaram | Caricaceae | Native | DD |
| 17 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 18 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 19 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 20 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 21 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 22 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 23 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 24 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 25 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 26 | *Datura stramonium* | Common Thorn apple | Oomathai | Solanaceae | Native | NA |
| 27 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 28 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 29 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 30 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 31 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 32 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 33 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 34 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 35 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 36 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 37 | *Euphorbia hirta* | Asthma Weed | AmmamPaccharisi | Euphorbiaceae | Native | NA |
| 38 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 39 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 40 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 41 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 42 | *Enteropogond olichostachyus* | Finger grass | | Poaceae | Native | NA |
| 43 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 15.6a: List of Insects recorded along the Oomayampatti Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 15.6b: List of Butterflies recorded along the Oomayampatti Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 5 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 7 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 15.6c: List of Dragonflies recorded along the OomayampattiLake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 15.6d: List of Arachnida recorded along the Oomayampatti Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 15.6e: List of Fishes recorded along the Oomayampatti Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 10 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 15.6f: List of Reptiles recorded along the Oomayampatti Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 15.6g: List of Birds recorded along the Oomayampatti Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Baillon's Crake | *Porzanapusilla* | Rallidae | Least Concern |
| 6 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 7 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 8 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 9 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 10 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 11 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 12 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 13 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 14 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 15 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 16 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 17 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 18 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 19 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 20 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

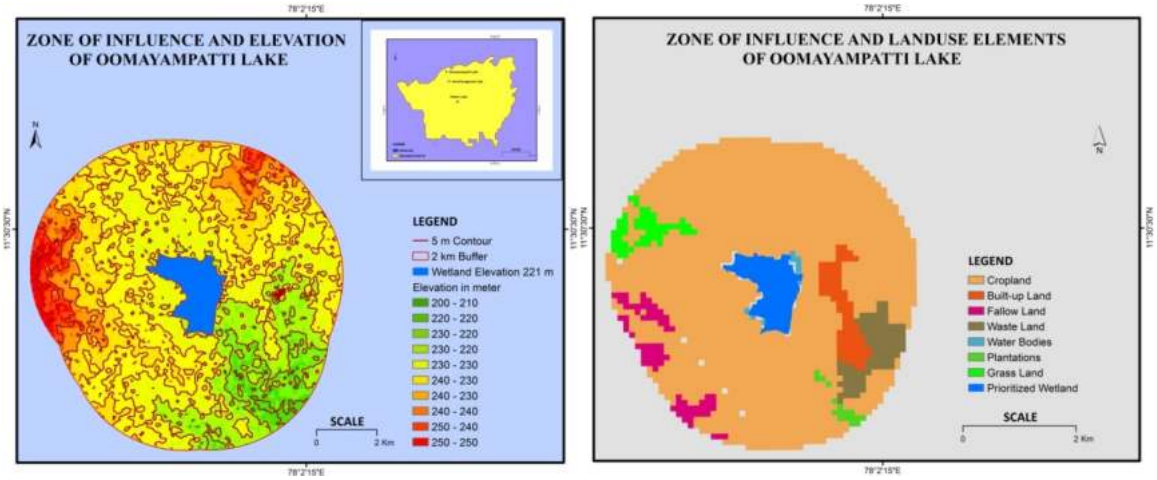
Table 15.6h: List of Mammals recorded along the Oomayampatti Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 15.4: Comparative Google imagery for Oomayampatti Lake**




**Map 15.5: The zone of influence around the Oomayampatti Lake.**



**Puthur Lake**

**Lake Survey Number:** 186

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Puthur Lake (Plate 37), also known as Velakondampatti.

1.2 Villages that surround the wetland include Putur, Velakondampatti.

1.3 & 1.4 The lake is based in Trichingode taluka in Namakal district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 18’27.8” N; 11° 18'32.3” N; 11° 18’35.8” N; and Longitude: 078° 05’29.2” E; 078° 05’21.1” E; 078° 05’23.2” E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 147 hectares (Map 15.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category Seasonal Intermittent tank. (Water is present for a maximum of 2 months).

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 171 to 175 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area, and overflow of Kollimalai stream.
b) The water in the wetland is temporary in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow joins the agriculture fields and Cauvery river.
d) The pH of the water was not recorded as the wetland was dry during the visit.
e) The salinity of the lake was not recorded as the wetland was dry during the visit.
f) The wetland had *Parthenium, Prosopis juliflora,* grass sp. and other weeds that dominated the landscape i.e 90%.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Namakal was 0.0 mm.
b) The atmospheric temperature was 37°C and the humidity was 37 %

2.7 The area of zone of influence is 2389.79 hectares with a fixed buffer area of 2 kms around the wetland (Map 15.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018 is given inMap15.6 & 15.7.

**Section III- Biodiversity**

3.1 List of Plant species: 16 species of plants were recorded around the wetland during our visit (Table 15.7).

3.2 List of animal species: 11 animal species including 5 domestic species were recorded during the survey (Table 15.8a-e).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 15.8a-e).

3.4 Major Plant invasive alien species and extent of invasion: Two invasive plants including *Prosopis juliflora*, *Accacia nilotica* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for agriculture.
4.2 The overflow water feeds the agricultural lands and the Cauvery river, however there has been no adequate rains for the past 10 years.
4.3 Fishery is not undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is insignificant runoff form the surrounding area.
4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture.
4.12 There are no agriculture activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 There is mining for sand or silt undertaken with the permission of the PWD in the absence of water.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

There were no serious issues recorded during the visit.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Sand and silt mining should be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published Literature available for Puthur Lake

Table 15.7: List of Plants recorded along the Puthur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 3 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 4 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 5 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 6 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 7 | *Wrightia tinctoria* | Sweet indrajao | Paalai | Apocynaceae | Native | LC |
| 8 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 9 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 10 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 11 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 12 | *Agave americana* | Agave, Century plant | | Asparagaceae | Introduced | |
| 13 | *Aloe vera* | Aloe vera, | Kathalai | Asphodelaceae | Introduced | |
| 14 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 15 | *Eragrostispilosa* | Indian lovegrass, | | Poaceae | Native | NA |
| 16 | *Sporobolus tenuissimus* | | | Poaceae | Introduced | |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 15.8a: List of Insects recorded along the Puthur Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Ants | *Camponotus sp.* | Formicidae |

Table 15.8b: List of Butterfly recorded along the Puthur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |

Table 15.8c: List of Odonates recorded along the Puthur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

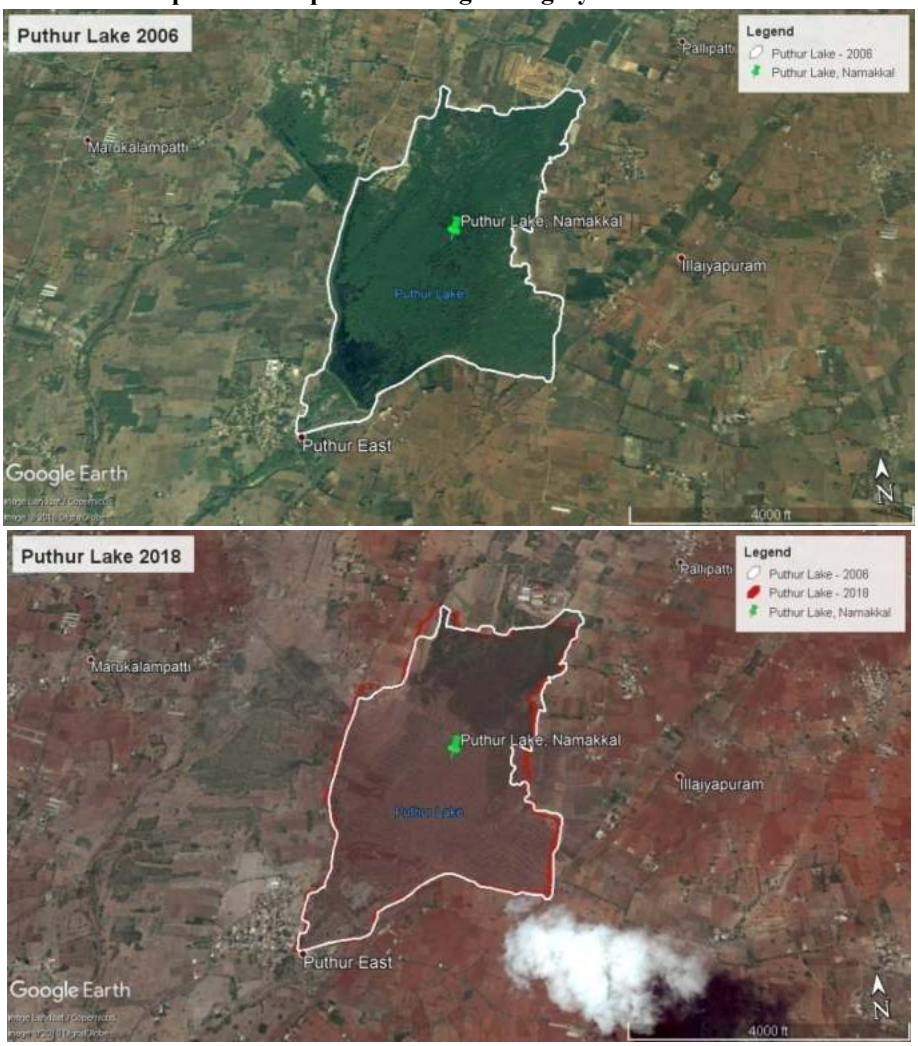
Table 15.8d: List of Reptiles recorded along the Puthur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

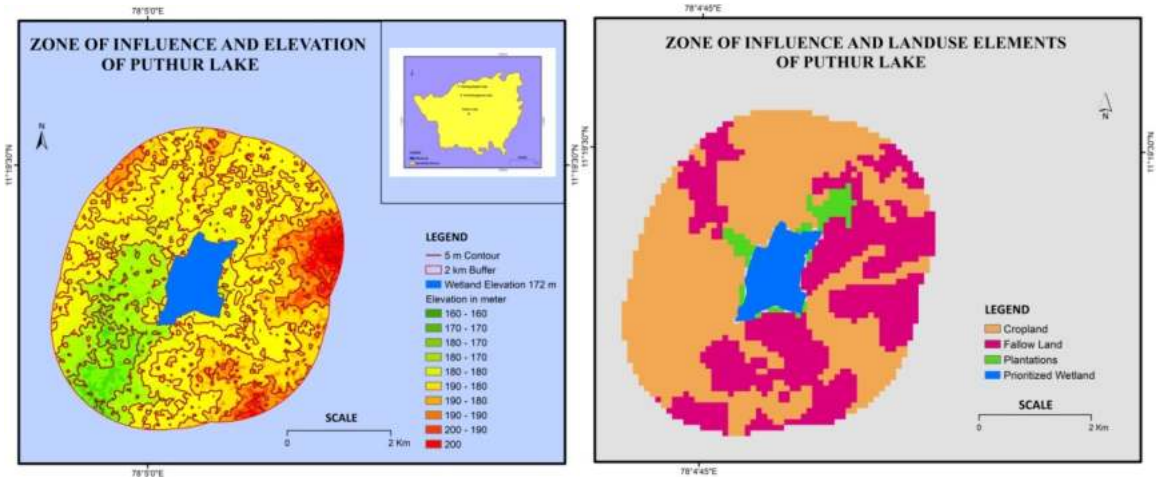
Table 15.8e: List of Birds recorded along the Puthur Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 2 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 3 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 4 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 5 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 6 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |

**Map 15.6: Comparative Google imagery for Puthur Lake**




**Map 15.7: The zone of influence around the Puthur Lake.**



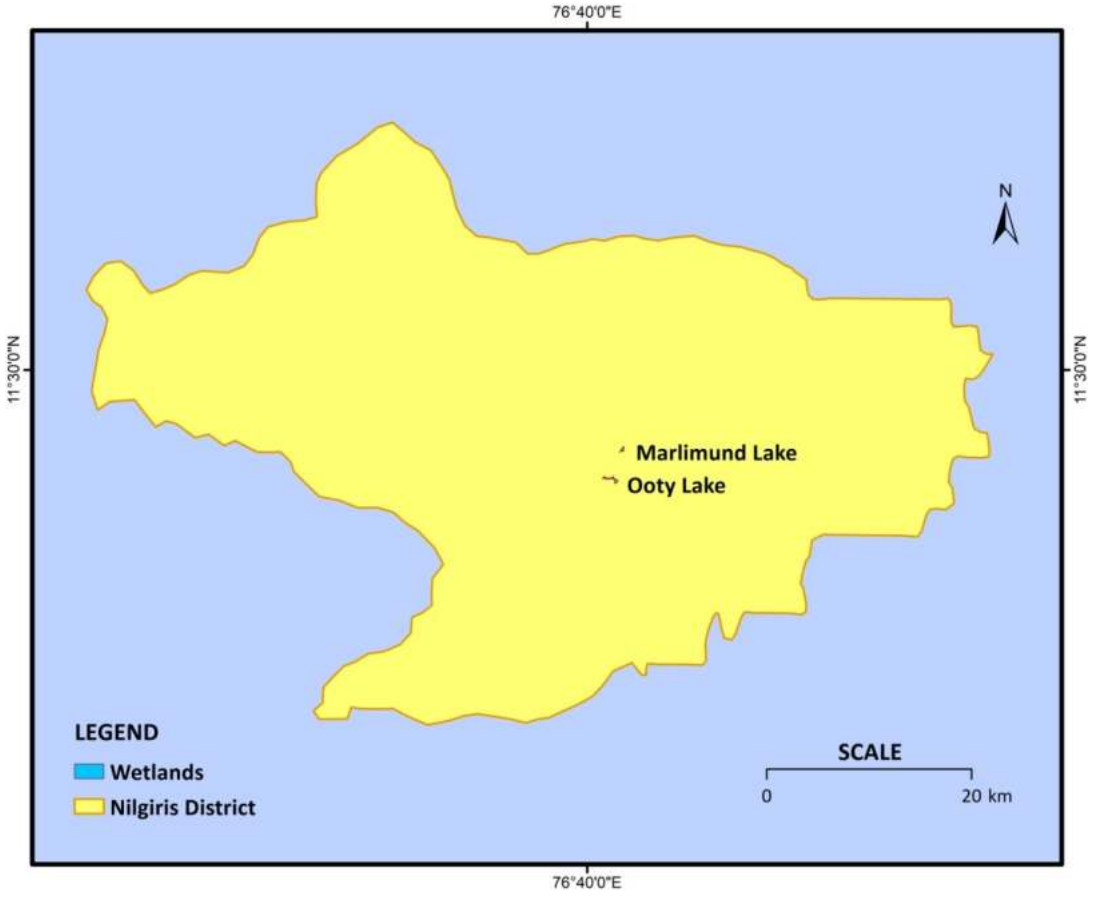
## 16. Nilgiris District

### 1. Introduction

Nilgiris is a mountainous district of Tamil Nadu bounded on North by Karnataka State, on the West by Coimbatore District, Erode District, South by Coimbatore District and Kerala State and on the East by Kerala State. Nilgiris is India's first biosphere. It has been declared as one of the 14 'hotspots' of the world because of its unique bio-diversity. Nilgiris, one of the oldest mountain ranges, located at the tri-junction of Tamil Nadu, Kerala and Karnataka. Nilgiris is a part of the Western Ghats. Ooty the "Queen of Hill Stations", Coonoor 19 kms form Ooty and Kotagiri 31 kms form Ooty, are the three hill stations of this district.

Total geographic area of Nilgiris is 2452.50 km².Total area under wetland is 3127 ha, which includes 17 small wetland (<2.25 ha). Major wetland types of the district are; Reservoirs (88.68 %) and Tanks/ponds (6.94 %).

We selected the Ooty lake in the Nilgiris district for preparing the brief document due to its importance to the locals and the tourism industry (Map 16.1). The second wetland was selected based on the google imagery.




**Map 16.1: Wetlands of Nilgiris District Assessed for Prioritization**

### Observations

Of the two wetlands selected in the district, Ooty lake is the larger of the two. Around the wetlands, we recorded 34 plant species both aquatic and terrestrial including 4 invasive species (Table 16.1). The faunal components totaled 83 species with the representation of 33 bird species of including the wetland birds. The field study revealed that

Ooty Lake was Mesotrophic while the Marlimund was Oligotrophic in status (Table 16.2). The water quality was comparatively better in Marlimundlake with very low TDS. The Ooty lake has high pollutants in water as well as the soil.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species in addition to the release of sewage and encroachment at Ootylake that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation

1. Ooty Lake
2. Marlimund Lake

Table 16.1: The flora and fauna recorded form the wetlands of Nilgiris District

| S. No | Name of the Wetland | Plants | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ooty Lake | 22(4) | 1 | 0 | 6 | 0 | 15 | 0 | 2 | 27 | 2 |
| 2 | Marlimund Lake | 30(1) | 8 | 7 | 6 | 1 | 3 | 0 | 0 | 15 | 2 |
| | Total | 34(4) | 9 | 7 | 11 | 1 | 17 | 0 | 2 | 33 | 3 |

Table 16.2: The water and soil quality assessed form the wetlands of Nilgiris District

| District Name | Nilgiris | |
|---|---|---|
| Wetland Name | Ooty Lake | Marlimund Lake |
| Wetland area (ha) | 22.7 | 7.94 |
| Buffer Area in Hectare (ha) | 1994.18 | 1588.88 |
| Air Temperature °C | 17.3 | 24.8 |
| Water Temperature °C | 17.8 | 22.8 |
| Humidity % | 63 | 29 |
| Nutrients in Water | Mesotrophic | Oligotrophic |
| Water pH | 7.7 | 8.6 |
| Water TDS ppm | 300 | 30.8 |
| Water Conductivity ppm | 820 | 250 |
| Light Penetration cms | 29 | 130 |
| Water Salinity ppt | 0.138 | 26.6 |
| DO mg/L | 1.63 | 14.23 |
| PO4P mg/L | 0.321 | 0.010 |
| Water Na ppm | 36.7 | 2 |
| Water K ppm | 11.1 | 0.4 |
| Water Li ppm | 0.15 | 0 |
| Water Ca ppm | 37.65 | 1.35 |
| Soil Colour code | 10YR 4/6 | 7.5YR 6/6 |
| Soil Colour | Dark Yellowish Brown | Reddish Yellow |
| Soil pH | 6.42 | 6.48 |
| Soil TDS ppm | 284 | 12.8 |
| Soil Conductivity ppm | 400 | 18.1 |
| Soil Salinity ppt | 0.193 | 0.017 |
| Soil Na ppm | 8.2 | 1 |
| Soil K ppm | 5.6 | 1.5 |
| Soil Li ppm | 0.1 | 0 |
| Soil Ca ppm | 31.9 | 1.2 |

**Marlimund Lake**

**Lake Survey Number:** 8

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as Marlimund Lake (Plate 38).

1.2 Villages that surround the wetland include Kozhipannai, Kavadasholai, Tony Bungalow, Kuzhi shola and Father Line

1.3 & 1.4 The lake is based in Ooty, Nilgiris district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 26'16.0" N; 11° 25'93.7" N; 11° 25'91.3" N; and Longitude: 076° 41'57.0" E; 076° 41'94.8" E; 076° 41'86.1" E;

1.6 The wetland is not a Protected Area but is adjoining the forest.

1.7 The wetland comes under the jurisdiction of Ooty Municipality.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 7.94 hectares (Map 16.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category permanent tank.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 2314.96 to 2304.90 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is permanent in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the Mayar River.
d) The pH of the water was 8.29.
e) The lake has fresh water and the salinity recorded was 26.6 ppt.
f) The wetland had vegetation like *Hydrilla verticiliata*, and weeds like *Lantana camara, Ipomoea nil* were observed in the landscape apart form the high altitude plants.

2.6 Climatic setting

a) Rainfall for the month of September 2018 in The Nilgiris district was 1.5 mm.
b) The atmospheric temperature was 24.8 °C and the humidity was 29 %

2.7 The area of zone of influence is 1588.88 hectares with a fixed buffer area of 2 kms around the wetland (Map 16.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 85%; | Grasslands/scrublands 0%; |
| Agricultural lands 10%; | Settlements (rural) 02%; |
| Settlements (Urban) 0%; | Industrial 03% |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 16.2 & 16.3).

**Section III- Biodiversity**

3.1 List of Plant species: 26 species of plants were recorded around the wetland during our visit (Table 16.3).

3.2 List of animal species: 42 animal species including 1 domestic species were recorded during the survey (Table 16.4a-g).

3.3 Species of Conservation importance: One Threatened species of birds species were recorded during the survey (Table 16.4a-g).

3.4 Major plant invasive alien species and extent of invasion: The plants including *Lanana camera* and *Ipomoea sp.* formed nearly minor component of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for drinking purpose and it is also pumped to the Governors bunglow.
4.2 The overflow water joins the Mayar river.
4.3 Fishery is not undertaken at all.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge and drinking.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area during the monsoon because of the terrain.
4.10 The wetland has a temple along its bank but no cultural and religious activities are performed in the wetland due to restrictions.
4.11 The site adjoining the wetland is majorly used by the Nature enthusiast for bird watching.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the role the wetland played during the monsoon floods and cyclone.

**Section VI Present and potential threats**

6.1 The wetland has no potential of change in the outflow of the water.
6.2 The wetland has no land use change pressure.
6.3 The wetland water quality and the ecological character is not changing and is well conserved.
6.4 Tourism should be regulated.

**Section VII Notification Category**

The wetland is not notified under any conservation categories and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland has some threat form the potential of increasing tourism form the nature enthusiast and should be regulated.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The flow of the water has to be regularly monitored for the maintaining the health of the water.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Marlimund lake**

Miriam R. (1998) Ph. D Thesis.A geographical study of tourism and its impact on the environment of Ooty town Tamil Nadu.Dept. of Geology.Bharathiar University. Coimbatore, Tamil Nadu.

Subramani T. (2012) Study of Pollution Prevention Strategies for Reclamation and Waster Management of Lake in Tourism Place.*International Journal of Modern Engineering Research*. 2(3), 763-773. ISSN: 2249-6645.

Table 16.3: List of Plant species recorded along the Marlimund Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Portulaca oleracea* | Indian Parseland | Paruppukeerai, | Portulacaceae | Native | NA |
| 2 | *Callianthe picta* | Painted Mallow, Indian mallow, Flowering maple, Parlor maple | | Malvaceae | Naturalized | |
| 3 | *Cissusadnata* | Entire-Leaf Wild Grape | | Vitaceae | Native | |
| 4 | *Cytisusscoparius* | Scotch Broom, Common broom | | Fabaceae | Naturalized | |
| 5 | *Ulexeuropaeus* | Common Gorse, Gorse, Furze | | Fabaceae | Introduced | LC |
| 6 | *Fragaria vesca* | Himalayan Strawberry | | Rosaceae | Native | |
| 7 | *Eucalyptus globulus* | | | Myrtaceae | Introduced | |
| 8 | *Oenothera odorata* | | | Onagraceae | Introduced | |
| 9 | *Passiflora edulis* | Passion Fruit, Edible Passion Flower, Passion flower, Purple granadilla | | Passifloraceae | Introduced | |
| 10 | *Passifloramollissima* | Banana Passion Flower, Banana Passion Fruit | | Passifloraceae | Introduced | |
| 11 | *Ipomoea purpurea* | Common Morning Glory, Tall Morning Glory, Purple Morning Glory, Garden morning glory | | Convolvulaceae | Naturalized | |
| 12 | *Brugmansia suaveolens* | Angel's trumpet | Madulam | Solanaceae | Naturalized | EW |
| 13 | *Solanum mauritianum* | Tree Tobacco, Woolly Nightshade, Ear-leaved Nightshade, Flannel Weed, Bugweed, Tobacco Weed, Tobacco Bush, Wild Tobacco, Kerosene Plant | | Solanaceae | Naturalized | |
| 14 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 15 | *Clerodendrum villosum* | Hill Glory Bower | Perukilai | Lamiaceae | Native | |
| 16 | *Orthosiphon pallidus* | Pale Java Tea | | Lamiaceae | Native | |
| 17 | *Commicarpus chinensis* | Diffuse Hogweed | KodiMinnai, Mukkuttikkodi | Nyctaginaceae | Native | NA |
| 18 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 19 | *Litsea wightiana* | Wight's Litsea | | Lauraceae | Native | |
| 20 | *Commelinadiffusa subs p. diffusa* | | | Commelinaceae | Native | |
| 21 | *Cedrus deodara* | Devdar, Himalayan Cedar, Deodar cedar | Devadaram | Pinaceae | Native | LC |
| 22 | *Pinus patula* | Mexican Weeping Pine, Jelecote Pine, spreading-leaved pine, Patula Pine | | Pinaceae | Introduced | |
| 23 | *Araucaria columnaris* | Christmas Tree, Cook-pine, New Caledonia-pine | | Araucariaceae | Introduced | LC |
| 24 | *Nephrolepis cordifolia* | | | Nephrolepidaceae | Introduced | |
| 25 | *Bryum archangelicum* | | | Bryaceae | | |
| 26 | *Rhodobryum giganteum* | | | Bryaceae | | |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed, EW -Extinct in the Wild

Table 16.4a: List of Insects recorded along the Marlimund Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 7 | Giant Honey Bee | *Apis dorsata* | Apidae |
| 5 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 8 | Flesh Fly | *Sarcophagidae sp.* | Sarcophagidae |

Table 16.4b: List of Butterfly species recorded along the Marlimund Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Red Helen | *Papilio helenus* | Papilioninae | Common |
| 2 | Blue Mormon | *Papilio polymnestor* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Pioneer | *Belenois aurota* | Pierinae | Common |

Table 16.4c: List of Odonate species recorded along the Marlimund Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Crimson Tailed Marsh Hawk | *Orthetrum pruinosum* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 16.4d: List of Arachnida species recorded along the Marlimund Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 9 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 16.4e: List of Fish species recorded along the Marlimund Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 2 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodimeen | Clupeidae | LC |
| 3 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 16.4f: List of Bird species recorded along the Marlimund Lake

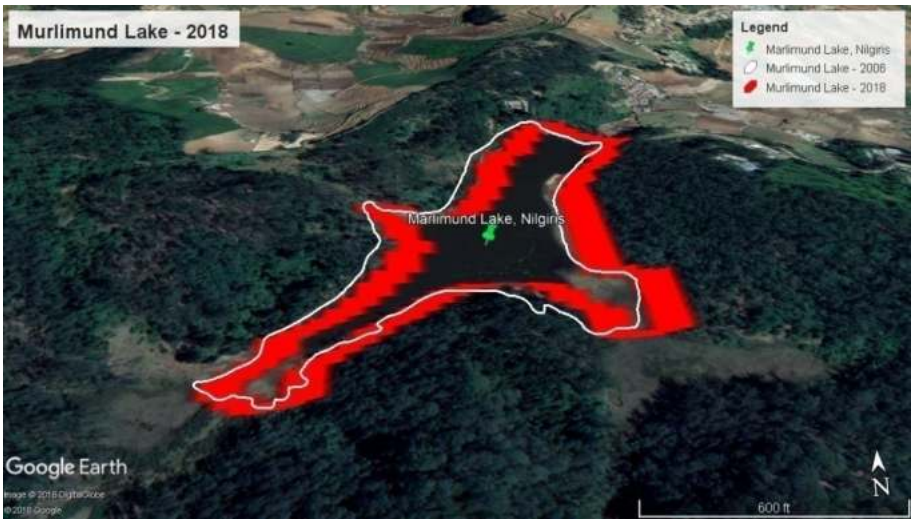
| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Lesser Goldenback | *Dinopium benghalense* | Picidae | Least Concern |
| 3 | White-spotted Fantail | *Rhipidura (albicollis) albogularis* | Rhipiduridae | Least Concern |
| 4 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 5 | Red-whiskered Bulbul | *Pycnonotus jocosus* | Pycnonotidae | Least Concern |
| 6 | Greenish Warbler | *Phylloscopus trochiloides* | Phylloscopidae | Least Concern |
| 7 | Oriental White-eye | *Zosterops palpebrosus* | Zosteropidae | Least Concern |
| 8 | Jungle Myna | *Acridotheres fuscus* | Sturnidae | Least Concern |
| 9 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 10 | Nilgiri Flycatcher | *Eumyiasal bicaudatus* | Muscicapidae | Near Threatened |
| 11 | Grey-headed Canary Flycatcher | *Culicicapa ceylonensis* | Stenostiridae | Least Concern |
| 12 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 13 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 14 | Citrine Wagtail | *Motacilla citreola* | Motacillidae | Least Concern |
| 15 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 16.4g: List of Mammal species recorded along the Marlimund Lake

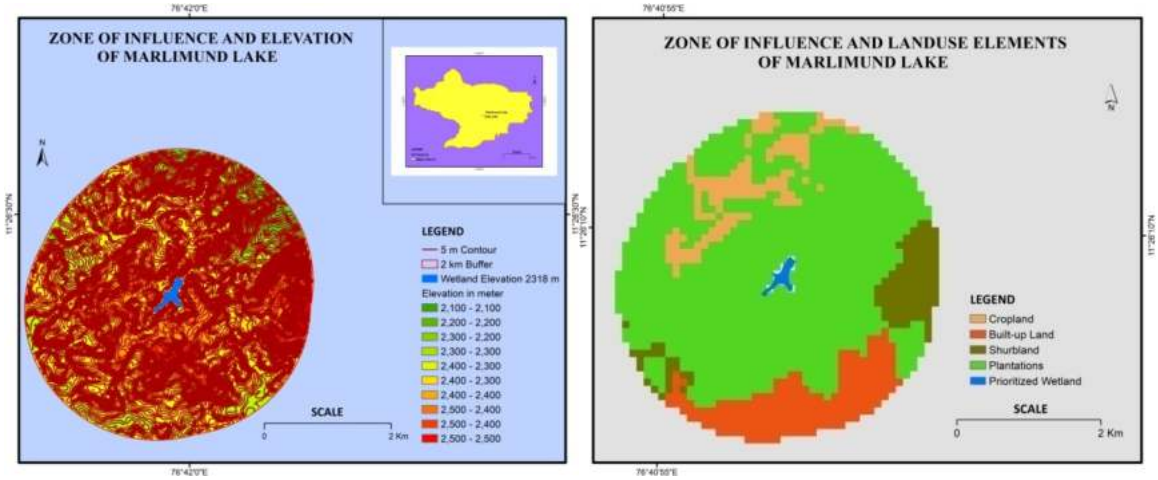
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 16.2: Comparative google imagery for Marlimund Lake**




**Map 16.3: Zone of Influence around the Marlimund Lake**



**Ooty Lake**

Ooty lake is an artificial lake constructed by John Sullivan, in 1824. The water flowing down mountain streams in the Ooty valley was dammed to form the lake. The lake became empty on three occasions when it breached its bund. The lake was originally intended to be used for fishing with ferries being used to travel across the lake. It gradually shrunk form its original size giving place to the current bus stand race course, and the lake park. The Tamil Nadu Tourism Development Corporation on behalf of the Tourism Department took the possession of the lake in 1973, for providing boating facilities as a tourist attraction.

**Lake Survey Number:** G 5/2

**Section I : Identification, Location and Jurisdiction**

1.1 Commonly known as Ooty Lake (Plate 38).
1.2 Villages that surround the wetland include Kasturibai colony, Kandhal, Ooty town, Fernal.
1.3 & 1.4 The lake is based in Ooty, Nilgiris district of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 11° 24'21.9" N; 11° 24'18.4" N; 11° 24'14.7" N; and Longitude: 076° 40'56.1" E; 076° 40'55.9" E; 076° 41'02.7" E;
1.6 The wetland is a Protected Area by the tourism department.
1.7 The wetland comes under the jurisdiction of Department of Tourism Government of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 22.7 hectares (Map 16.4).
2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category permanent tank.
2.3 Based on the secondary information the average depth is 3 meters for the wetland.
2.4 The elevation of the wetland is 2210 to 2257 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and the sewage outflow.
   b) The water in the wetland is permanent in nature.
   c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the Sandinalar dam.
   d) The pH of the water was between 7.4 and 7.7.
   e) The lake has fresh water and the salinity recorded was 0.138 ppt.
   f) The wetland had vegetation like *Lantana carnea* and other weeds that dominated the landscape.
2.6 Climatic setting
   a) Rainfall for the month of March 2018 in The Nilgiris district was 1.5 mm.
   b) The atmospheric temperature varied between 15.8 and 19.2°C and the humidity was 41 and 63 %.
2.7 The area of zone of influence is 1994.18 hectares with a fixed buffer area of 2 kms around the wetland (Map 16.5).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 40%; | Grasslands/scrublands 0%; |
| Agricultural lands 10%; | Settlements (rural) 0%; |
| Settlements (Urban) 45%; | Industrial 5% |

2.9 The comparison of the wetland for the years 2006 and 2017 is given in Map 16.4& 16.5.

**Section III- Biodiversity**

3.1 List of Plant species: 24 species of plants were recorded around the wetland during our visit ( Table 16.5).
3.2 List of animal species: 53 animal species were recorded during the survey (Table 16.6a-f).
3.3 Species of Conservation importance: One Threatened species of birds and two fish species were recorded during the survey (Table 16.6a-f).

3.4 Major Plant invasive alien species and extent of invasion: Four invasive plants including *Lanana camera, Eichornea crassipes* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although thereare introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose or agriculture. The municipal corporation provides drinking water from the Parcinsolai dam and Borewell water at regular intervals that is used by the locals to fulfill their daily requirements. The wetland is completely sewage fed.

4.2 The overflow water joins the Sandinela dam.

4.3 Fishery is not undertaken at all.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding area during the monsoon because of the terrain and the surroundings are highly encroached.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are not performed in the wetland due to the sewage and contamination.

4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage and as toilet.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 The locals are well aware of the importance of the wetland due to the role the wetland played during the monsoon floods and cyclone.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure.

6.3 The wetland water quality and the ecological character is changing rapidly.

**Section VII Notification Category**

The wetland is is below 2500 m below Sea level is notified under the National lake Conservation Plan and is also protected by the Tourism department.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change sewage release and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further. Oreover the sewage treatment plant is not efficient enough to treat the volume of the sewage and effluent released into the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Ooty lake


Anusha G. (2017) Remediation of Ooty Lake through Bio-Ozolyte Process in Udhagamandalam Block, The Nilgiris District, Tamil Nadu. Indian Journal of Geo-Marine Sciences. Vol.45 (09): 1879-1882.

Ilavarasan N., RajanIlangovan and Rajesh Prasanna P. (2016) Water quality assessment on Ooty lake in Nilgiris district. Journal of Environmental Biology 37(6):1463-1472.

Mohan R. (1992) Hydrobiological studies in the Ooty Lake, Udhagamandalam, Tamil Nadu with special reference to pesticide pollution and its impact on the phytoplankton. *Ph.D., Thesis*. University of Madras, Guindy Campus, Chennai, Tamil Nadu. pp. 116.

Neelakantan K.S. (2008) Conservation and restoration of lakes in Tamil Nadu. In Sengupta M. and Dalwani R eds. Proceedings of TAAL 2007: The 12th World lake Conference. 1669-1671.

Subramani T. (2012) Study of pollution prevention strategies for reclamation of Ooty lake. International Journal of Engineering Research and Applications. Vol. 2(3):783-791.


Table 16.5: List of Plant species recorded along the Ooty Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Callianthe picta* | Painted Mallow, Indian mallow | | Malvaceae | Naturalized | |
| 2 | *Melia azedarach* | Malabar Neem | MalaiVembu | Meliaceae | Native | LC |
| 3 | *Cytisus scoparius* | Scotch Broom, Common broom | | Fabaceae | Naturalized | |
| 4 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 5 | *Fragaria vesca* | Himalayan Strawberry | | Rosaceae | Native | |
| 6 | *Eucalyptus globulus* | | | Myrtaceae | Introduced | |
| 7 | *Oenothera odorata* | | | Onagraceae | Introduced | |
| 8 | *Passiflora edulis* | Edible Passion Flower, | | Passifloraceae | Introduced | |
| 9 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| | *Pentandma indicum* | Sonkadi | Jimkipoo | Asteraceae | Native | NA |
| 10 | *Ipomoea purpurea* | Common Morning Glory, | | Convolvulaceae | Naturalized | |
| 11 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 12 | *Brugmansia suaveolens* | Angel's trumpet | Madulam | Solanaceae | Naturalized | EW (Extinct in the Wild) |
| 13 | *Clerodendrum villosum* | Hill Glory Bower | Perukilai | Lamiaceae | Native | |
| 14 | *Orthosiphon pallidus* | Pale Java Tea | | Lamiaceae | Native | |
| 15 | *Commicarpus chinensis* | Diffuse Hogweed | KodiMinnai, | Nyctaginaceae | Native | NA |
| 16 | *Litsea wightiana* | Wight's Litsea | | Lauraceae | Native | |
| 17 | *Casuarina equisetifolia* | Whistling Pine, Casuarina, | Savukku | Casuarinaceae | Native | NA |
| 18 | *Cedrus deodara* | Devdar, Himalayan Cedar | Devadaram | Pinaceae | Native | LC |
| 19 | *Pinus patula* | Mexican Weeping Pine | | Pinaceae | Introduced | |
| 20 | *Araucaria columnaris* | Christmas Tree, Cook-pine | | Araucariaceae | Introduced | LC |
| 21 | *Cupressus funebris* | | | Cupressaceae | Introduced | DD |
| 22 | *Nephrolepis cordifolia* | | | Nephrolepidaceae | Introduced | |
| 23 | *Rhodobryum giganteum* | | | Bryaceae | | |
| 24 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 16.6a: List of Crustacean recorded along the Ooty Lake

| S. No | Common Name | Scientific Name | Family | Class |
|---|---|---|---|---|
| 1 | Daphnia | *Daphnia sp.* | Daphniidae | Crustacea |

Table 16.6b: List of Butterflies recorded along the Ooty Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |

| | | | | |
|---|---|---|---|---|
| 4 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 5 | Common Crow | *Euploea core* | Danaidae | Common |
| 6 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 16.6c: List of Fishes recorded along the Ooty Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 9 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 10 | *Macrognathus pancalus* | Spiny eel | Aaraameen | Mastacembelidae | LC |
| 11 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 12 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kullakendai | Cyprinidae | LC |
| 13 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |
| 14 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 15 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

Table 16.6d: List of Reptiles recorded along the Ooty Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

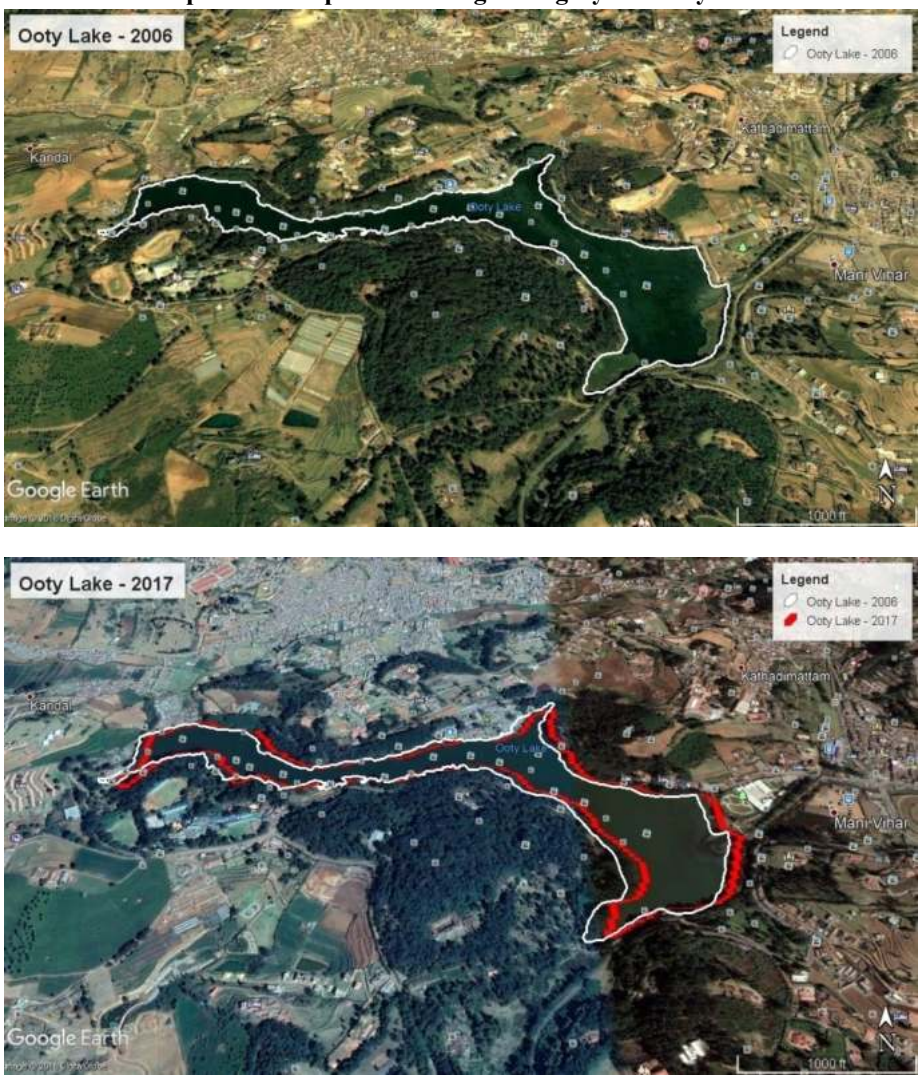
Table 16.6e: List of Birds recorded along the Ooty Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 5 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 6 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 7 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 8 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 9 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 10 | White-spotted Fantail | *Rhipidura (albicollis) albogularis* | Rhipiduridae | Least Concern |
| 11 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Cinerous Tit | *Parus cinereus* | Paridae | Least Concern |
| 14 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 15 | Red-whiskered Bulbul | *Pycnonotus jocosus* | Pycnonotidae | Least Concern |
| 16 | Square-tailed Bulbul | *Hypsipetes (leucocephalus) gandesa* | Pycnonotidae | Least Concern |
| 17 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 18 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 19 | Greenish Warbler | *Phylloscopus trochiloides* | Phylloscopidae | Least Concern |
| 20 | Oriental White-eye | *Zosterops palpebrosus* | Zosteropidae | Least Concern |
| 21 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 22 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 23 | Nilgiri Flycatcher | *Eumyias albicaudatus* | Muscicapidae | Near Threatened |
| 24 | Grey-headed Canary Flycatcher | *Culicicapa ceylonensis* | Stenostiridae | Least Concern |
| 25 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 26 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 27 | Yellow Wagtail | *Motacilla flava* | Motacillidae | Least Concern |

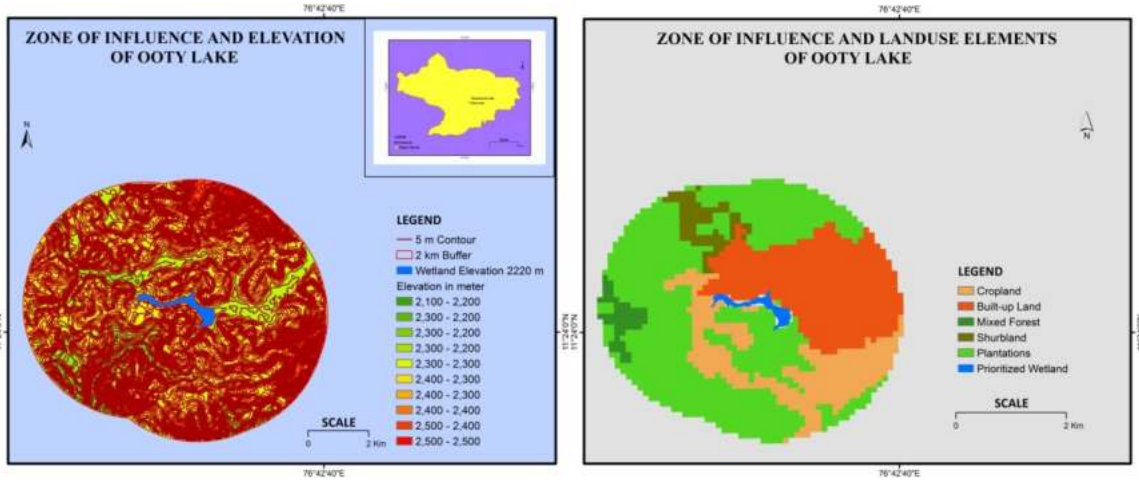
Table 16.6f: List of Mammals recorded along the Ooty Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Bonnet Macaque | *Macaca radiata* | Cercopithecidae | Least Concern |
| 2 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 16.4: Comparative Google imagery for Ooty Lake**




**Map 16.5: The zone of influence around the Ooty lake.**



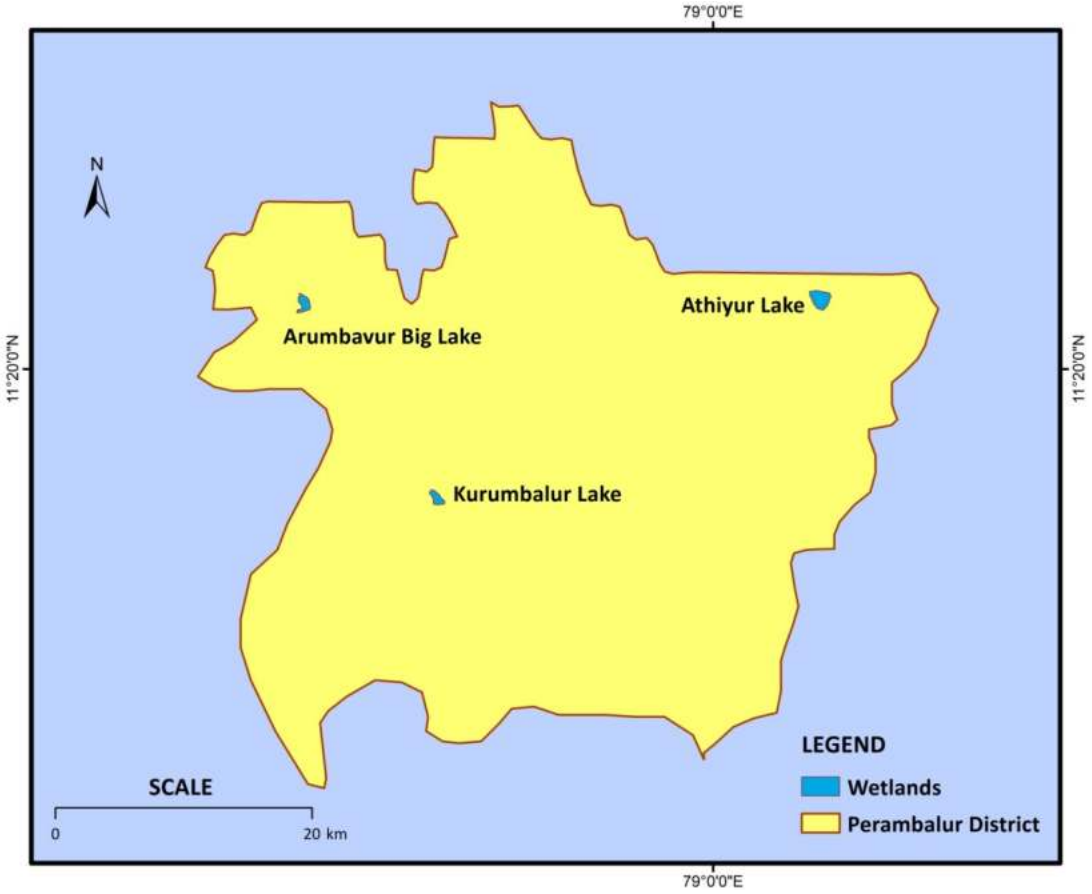
## 17. Perambalur district

### 1. Introduction

Perambalur district is located at the centre of the state. The district is bounded by Cuddalore district in the north, Tiruchirappalli district in the south, Ariyalur in the east and Namakkal and Tiruchirappalli districts in the west.The district was initially carved out of Tiruchirapalli district during 1995 and again divided into Perambalur and Ariyalur in 2007. The district lies in the Southern plateau & hill zone of Agro-climate regional planning with characteristics of semi arid climate. The soil is predominantly red loamy and black soil. It is an inland district without coastal line. The District has Vellar River in the North and it has well marked natural divisions. The Pachamalai hill situated on the North boundary of Perambalur is the most important hill in the district.

The District has an area of 1,757 Sq.Km. The District has Vellar River in the North and it has well marked natural divisions.

For the preparation of the brief document the wetlands were selected on the basis of its size the number of villages, the decadal changes in the google imagery and the ecological importance to the locals (Map 17.1).




**Map 17.1: Wetlands of Perambalur district assessed for Prioritization**

**Observations**

Of the three wetlands selected in the district, Athiyur is the largest while Kurumbalur is the smaller of the three wetlands. Around the three wetlands, we recorded 85 plant species both aquatic and terrestrial including 16 invasive species (Table 17.1). The faunal components totaled 79 species with the representation of 29 bird species including the wetland birds. The field study revealed that Athyur Lake was Eutrophic with high levels of phosphorus while the other two wetlands were dry and the status was unknown (Table 17.2). The soil of the two dry wetlands were hydric with varying concentration of lesser elements.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species, mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation

1. Kurumbalur Lake
2. Arumbavur Big Lake
3. Athiyur Lake

Table 17.1: The flora and fauna recorded form the wetlands of Perambalur District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Athiyur Lake | 45(12) | 5 | 6 | 6 | 2 | 11 | 1 | 2 | 10 | 4 |
| 2 | Arumbavur Big Lake | 39(8) | 3 | 3 | 5 | 0 | 0 | 0 | 3 | 24 | 4 |
| 3 | Kurumbalur Lake | 38(7) | 0 | 3 | 7 | 0 | 0 | 0 | 1 | 6 | 4 |
| | Total | 85(17) | 9 | 7 | 14 | 2 | 11 | 1 | 3 | 29 | 5 |

Table 17.2: The water and soil quality assessed form the wetlands of Perambalur District

| **District Name** | Perambalur | | |
|---|---|---|---|
| **Wetland Name** | Kurumbalur Lake | Athiyur Lake | Arumbavur Big Lake |
| **Wetland area (ha)** | 74.2 | 173 | 92.5 |
| **Buffer Area in Hectare (ha)** | 2015 | 2283.51 | 2130.36 |
| **Air Temperature °C** | 40 | 33 | 35 |
| **Water Temperature °C** | | 30.3 | |
| **Humidity %** | 30 | 48 | 35 |
| **Nutrients in Water** | not known | Eutrophic | not known |
| **Water pH** | | 8.7 | |
| **Water TDS ppm** | | 316 | |
| **Water Conductivity ppm** | | 423 | |
| **Light Penetration cms** | | 35 | |
| **Water Salinity ppt** | | 1.178 | |
| **DO mg/L** | | 3.05 | |
| **PO4P mg/L** | | 0.100 | |
| **Water Na ppm** | | 118.6 | |
| **Water K ppm** | | 9.7 | |
| **Water Li ppm** | | 0.2 | |
| **Water Ca ppm** | | 47.5 | |
| **Soil Colour code** | 7.5YR 5/3 | 10YR 4/3 | 7.5YR 5/4 |
| **Soil Colour** | Brown | Brown | Brown |
| **Soil pH** | 8.04 | 7.49 | 7.33 |
| **Soil TDS ppm** | 688 | 135 | 1.42 |
| **Soil Conductivity ppm** | 967 | 190 | 1993 |
| **Soil Salinity ppt** | 0.477 | 0.092 | 1.01 |
| **Soil Na ppm** | 162.5 | 21.5 | 312.4 |
| **Soil K ppm** | 3.2 | 2.1 | 1.7 |
| **Soil Li ppm** | 0.1 | 0 | 0.1 |
| **Soil Ca ppm** | 50.7 | 11.9 | 107.2 |

**Arumbavur Big Lake**

**Lake Survey Number:** Not Provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Arumbavur Big Lake (Plate 39).

1.2 Villages that surround the wetland include Arumbavur.

1.3 & 1.4 The lake is based in Veppanthattaitalakua in Perambalur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 22’27.8” N; 11° 22'27.1” N; 11° 22’26.8” N; 11° 22'26.2” N; and Longitude: 078° 42’54.4” E; 078° 42’46.3” E; 078° 42’41.9” E; 078° 42’50.3” E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 92.5 hectares (Map 17.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank with water for three to four months.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 168 to 173 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area, and overflow of Sengatpatti Dam.
b) The water in the wetland is intermittent in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow joins the agriculture fields and Sittheri lake and Tolatur lake.
d) The pH of the water was not assessed as the wetland was completely dry during our visit.
e) The salinity of the lake was not undertaken as the wetland was completely dry. However, as per the locals it is a fresh water body.
f) The wetland had *Ipomoea, Prosopis juliflora, Parthenium histrophorus,* grass sp. and other weeds that dominated the landscape i.e 90%.

2.6 Climatic setting

a) Rainfallfor the month of February 2018 in Perambalur was 0.0 mm.
b) The atmospheric temperature was 35°C and the humidity was 35 %

2.7 The area of zone of influence is 2130.34 hectares with a fixed buffer area of 2 kms around the wetland (Map 17.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 05%; | Grasslands/scrublands 5%; |
| Agricultural lands 75%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2014 and 2018 is given in Map 17.2 & 17.3.

**Section III- Biodiversity**

3.1 List of Plant species: 36 species of plants were recorded around the wetland during our visit (Table 17.3).

3.2 List of animal species: 42 animal species including 3 domestic species were recorded during the survey (Table 17.4a-f)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 17.4a-f)

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Prosopis juliflora*, *Accacia indica*, and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species like Tilapia and common carps were reported by the locals. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for agriculture.
4.2 The overflow water feeds the agricultural lands.
4.3 Whenever the water is present, fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has one major temple along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture.
4.12 There are no agriculture activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken with the permission of the PWD.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within and around the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure, water scarcity, encroachment and garbage dumping.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat from landuse change.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Silt and sand mining should be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available forArumbavur Big Lake

Table 17.3: List of Plants recorded along the Arumbavur Big Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Cocculus diversifolius* | | | Menispermaceae | Introduced | |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Malvastrumcoromandelia num subsp. coromandelia num* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordata* | Long-stockSida | Kurunthotti | Malvaceae | Native | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 9 | *Clitoria ternatea* | Butterfly Pea | SanguKannikkodi | Fabaceae | Native | NA |
| 10 | *Mimosa pudica* | Touch Me Not | ThottaalChinungi | Fabaceae | Native | LC |
| 11 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 12 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 13 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 14 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 15 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 16 | *Alangium salviifolium* | Sage leaved Alangium | Alandi | Cornaceae | Native | NA |
| 17 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 18 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 19 | *Madhucalongifolia var. l atifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 20 | *Azima tetracantha* | Needle Bush, Mistletoe Berrythorn | Sugam cheddi, Sangilai | Salvadoraceae | Native | NA |
| 21 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 22 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 23 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 24 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 25 | *Justicia tranquebariensis* | Tarangambadi Justicia | PunnakuPoodu, Mutaliyar, Narimurunkai, | Acanthaceae | Native | |
| 26 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 27 | *Mirabilis jalapa* | Four O'Clock, Beauty of the Night | Pattarasu, AndhiMandarai | Nyctaginaceae | Naturalized | NA |
| 28 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 29 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 30 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 31 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 32 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 33 | *Cyperus dubius* | White Water Sedge | Velutthanirbasi | Cyperaceae | Native | LC |
| 34 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 35 | *Bambusa bambos* | Indian Thorny Bamboo | kulay-munkil, peru-munkil | Poaceae | Native | NA |
| 36 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 17.4a: List of Insects recorded along the Arumbavur Big Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |

Table 17.4b: List of Butterflies recorded along the Arumbavur Big Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 3 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 5 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 17.4c: List of Odonates recorded along the Arumbavur Big Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 17.4d: List of Reptiles recorded along the Arumbavur Big Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake Skink | *Lygosoma punctatus* | Scincidae | Least Concern |

Table 17.4e: List of Birds recorded along the Arumbavur Big Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | White-eyed Buzzard | *Butastur teesa* | Accipitridae | Least Concern |
| 3 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 4 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 5 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 6 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 7 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 8 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 9 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 10 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 11 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 12 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 13 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 14 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 15 | White-browed Bulbul | *Pycnonotus luteolus* | Pycnonotidae | Least Concern |
| 16 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 17 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 18 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 19 | Tawny-bellied Babbler | *Dumetiahyperythra* | Timaliinae | Least Concern |
| 20 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 21 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 22 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 23 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 24 | Loten's Sunbird | *Cinnyris lotenia* | Nectariniidae | Least Concern |

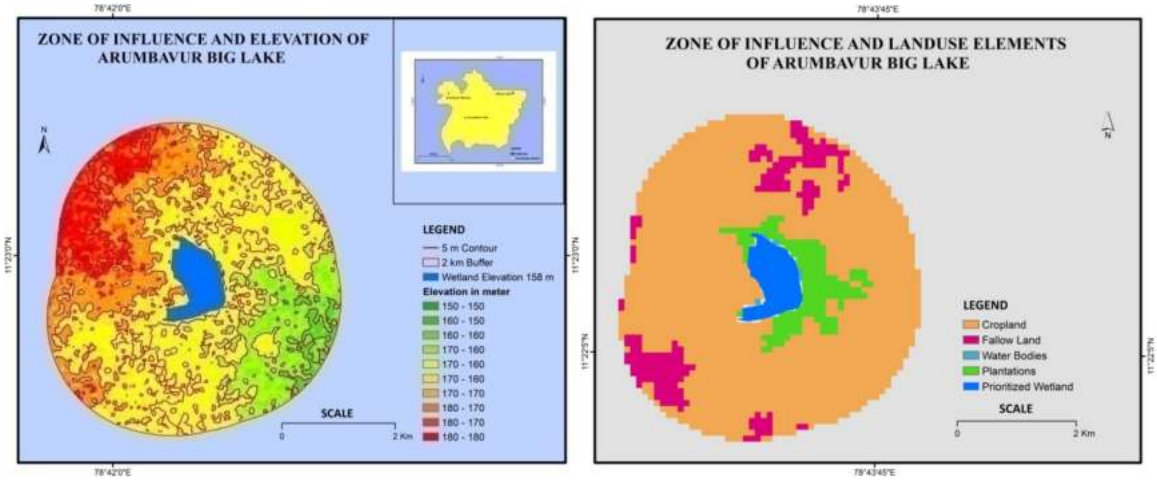
Table 17.4f: List of Mammals recorded along the Arumbavur Big Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 17.2: Comparative Google imagery for Arumbavur Big Lake**




**Map 17.3: The zone of influence around the Arumbavur Big Lake.**



**AthiyurLake**

**Lake Survey Number:** 229

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Athiyur lake (Plate 39).

1.2 Villages that surround the wetland include Athiyur, Ovalur, Pudhupetai, Kudikkadu, Agaramsegur.

1.3 & 1.4 The lake is based in Perambalur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 23’10.9” N; 11° 23'13.6” N; 11° 23’14.6” N; 11° 23'15.4” N; and Longitude: 079° 04’53.9” E; 079° 04’45.2” E; 079° 04’40.1” E; 079° 04’36.6” E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 173 hectares (Map 17.4).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) tank category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 2 meters for the wetland.

2.4 The elevation of the wetland is 78 to 81 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area, and overflow of Vellar river system.
b) The water in the wetland is intermittent in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow joins the agriculture fields and Kapparanur lake, Keelmuthur lake and Vayalur lake.
d) The pH of the water was 8.7.
e) The lake has fresh water with the salinity recorded at 1.178 ppt at the time of sampling.
f) The wetland had *Ipomoea, Prosopis juliflora, Lantna camera*, grass sp. and other weeds that dominated the landscape i.e 90%.

2.6 Climatic setting

a) Rainfallfor the month of February 2018 in Perambalur was 0.0 mm.
b) The atmospheric temperature was 33°C and the humidity was 48 %

2.7 The area of zone of influence is 2283.5 hectares with a fixed buffer area of 2 kms around the wetland (Map 17.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 75%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2000 and 2017 is given inMap17.4& 17.5.

**Section III- Biodiversity**

3.1 List of Plant species: 41 species of plants were recorded around the wetland during our visit (Table 17.5).

3.2 List of animal species: 47 animal species including 3 domestic species were recorded during the survey (List attached - Table 17.6a-h).

3.3 Species of Conservation importance: Threatened species of birds were not observed but two threatened species of fish were reported during the survey (Table 17.6a-h).

3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plants including *Prosopis juliflora*, *Lantana camara* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species Tilapia and common carps were reported by the locals. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for agriculture.
4.2 The overflow water feeds the agricultural lands.
4.3 Whenever the water is present, fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture.
4.12 There are agriculture activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken with the permission of the PWD.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within and around the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure, water scarcity, encroachment and garbage dumping.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat from landuse change mainly due to solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The dumping of waste and agriculture within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Athiyur Lake**

There is no scientific literature available for Athiyur Lake.

Table 17.5: List of Plant species recorded along the Athiyur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Abelmoschus angulosus* | --- | KattuSemparuthi | Malvaceae | Native | NA |
| 3 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 7 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 8 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 9 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 10 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 11 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 12 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 13 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 14 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 15 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 16 | *Oldenlandiaum bellata* | Chay Root, Indian madder, Choy root | Chayam, Chayaver, Emboorel, Imbura-ver | Rubiaceae | Native | |
| 17 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 18 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 19 | *Azima tetracantha* | Needle Bush, Mistletoe Berrythorn | Sugam cheddi, Sangilai | Salvadoraceae | Native | NA |
| 20 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 21 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 22 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 23 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 24 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 25 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 26 | *Ocimum americanum* | Hoary Basil, | NaiThulasi | Lamiaceae | Native | NA |
| 27 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 28 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 29 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 30 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 31 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 32 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 33 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 34 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 35 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 36 | *Jatropha curcas* | Psychic Nut | Kaattuamanakku, Katukottai | Euphorbiaceae | Invasive | NA |
| 37 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 38 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 39 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 40 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 41 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 17.6a: List of Insects recorded along the Athiyur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 3 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |

| | | | |
|---|---|---|---|
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 17.6b: List of Butterflies recorded along the Athiyur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 4 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 6 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 17.6c: List of Dragonflies recorded along the Athiyur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 2 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Coral-Tailed Cloud Wing | *Tholymis tillarga* | Libellulidae | Common |

Table 17.6d: List of Arachnida recorded along the Athiyur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 17.6e: List of Fishes recorded form the Athiyur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgalmeen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 17.6e: List of Amphibians recorded along the Athiyur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

Table 17.6f: List of Reptiles recorded along the Athiyur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 17.6g: List of Birds in Athiyur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | LC |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | LC |
| 3 | Little Egret | *Egretta garzetta* | Ardeidae | LC |
| 4 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | LC |

| | | | | |
|---|---|---|---|---|
| 5 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | LC |
| 6 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | LC |
| 7 | House Crow | *Corvus splendens* | Corvidae | LC |
| 8 | Barn Swallow | *Hirundo rustica* | Hirundinidae | LC |
| 9 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | LC |
| 10 | Common Myna | *Acridotheres tristis* | Sturnidae | LC |

Table 17.6h: List of Mammals recorded along the Athiyur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

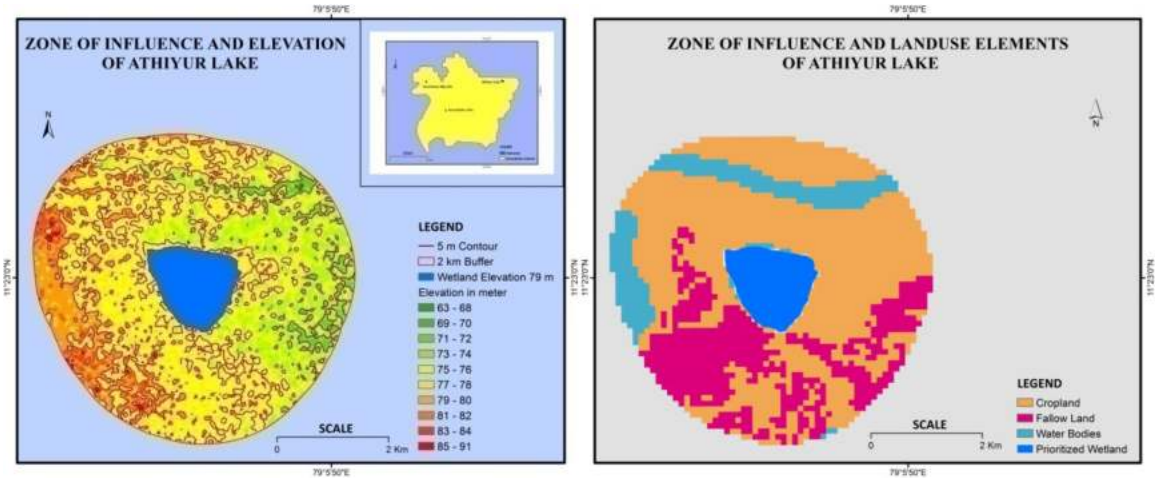
**Map 17.4: Comparative Google imagery for Athiyur Lake**







**Map 17.5: The zone of influence around the Athiyur Lake.**



**Kurumbalur Lake**

**Lake Survey Number:** Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kurumbalur Lake (Plate 40).

1.2 Villages that surround the wetland include Kurumballor.

1.3 & 1.4 The lake is based in Perambur taluka in Perambur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 14’46.5” N; 11° 14'52.8” N; 11° 14’55.3” N; and Longitude: 078° 48’04.4” E; 078° 48’06.8” E; 078° 48’08.9” E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 74.2 hectares (Map 17.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank with water for three to four months.

2.3 Based on the secondary information the average depth is 2.0 meters for the wetland.

2.4 The elevation of the wetland is 158 to 159 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area, and overflow of Ladapuram eri.
b) The water in the wetland is intermittent in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow joins the agriculture fields and Senjerieri.
d) The pH of the water was not assessed as the wetland was completely dry during our visit.
e) The salinity of the lake was not undertaken as the wetland was completely dry. However as per the locals it is a fresh water body.
f) The wetland had *Ipomoea sp., Prosopis juliflora, Parthenium histrophorus, Lantana camara, Acasia sp.,* grass sp. and other weeds that dominated the landscape i.e 90%.

2.6 Climatic setting

a) Rainfallfor the month of February 2018 in Perambalur was 0.0 mm.
b) The atmospheric temperature was 40°C and the humidity was 30 %

2.7 The area of zone of influence is 2015 hectares with a fixed buffer area of 2 kms around the wetland(Map 17.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 90%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2009 and 2017 is given in Map 17.6 & 17.7.

**Section III- Biodiversity**

3.1 List of Plant species:36 species of plants were recorded around the wetland during our visit (Table 17.7).

3.2 List of animal species: 21 animal species including 3 domestic species were recorded during the survey (Table 17.8a-e).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 17.8a-e).

3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Prosopis juliflora*, *Parthenium hysterophorus*, *Lantana camara* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species Tilapia and common carps were reported by the locals. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water from the wetland is used for agriculture.
4.2 The overflow water feeds the agricultural lands.
4.3 Whenever the water is present, fishery is undertaken for recreational purpose only.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has one major temple along its vicinity and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture.
4.12 There are no agriculture activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken with the permission of the PWD.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within and around the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure, water scarcity, encroachment and garbage dumping.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Silt and sand mining should be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published literature available for Kurumbalur Lake

Table 17.7: List of Plant recorded along the Kurumbalur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 7 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 8 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 9 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 10 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 11 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 12 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 13 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 14 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 15 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 16 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 17 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 18 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 19 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 20 | *Pedalium murex* | Large caltrops | Yanainerunji,Perunerunji | Pedaliaceae | Native | NA |
| 21 | *Barleria buxifolia* | Box-Leaved Barleria | Kattimullu, Rosmullippuntu | Acanthaceae | Native | NA |
| 22 | *Justicia adhatoda* | Malabar Nut, white vasa, yellow vasa | acalai, atatotai, attucam, cimma-muki, cinkam, cuvatu, iratta-pittam, kattu-murunkai, pavattai, vacai, | Acanthaceae | Native | |
| 23 | *Justicia tranquebariensis* | Tarangambadi Justicia | PunnakuPoodu, Mutaliyar, Narimurunkai, Narimurunkaicceti, | Acanthaceae | Native | |
| 24 | *Boerhavia diffusa* | Red hogweed | MukaratteKirai | Nyctaginaceae | Native | NA |
| 25 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 26 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 27 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 28 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 29 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 30 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 31 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 32 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 33 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 34 | *Cynodon dactylon* | Bermuda grass, Couch gras | | Poaceae | Invasive | NA |
| 35 | *Eleusine indica* | Indian crowfoot grass,Indian goose grass | Thipparagi, Keveru | Poaceae | Native | LC |
| 36 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 17.8a: List of Butterflies recorded along the Kurumbalur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 6 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 7 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 17.8b: List of Odonates recorded along the Kurumbalur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 17.8c: List of Reptiles recorded along the Kurumbalur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

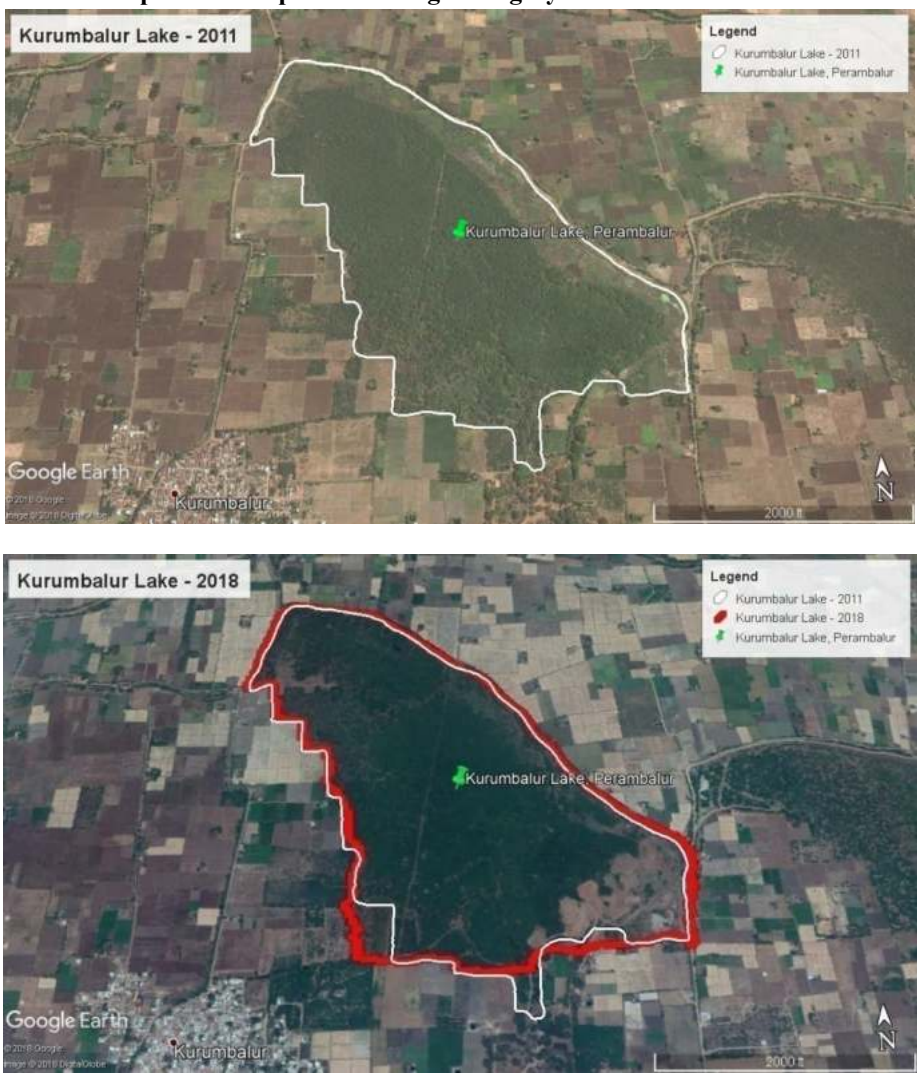
Table 17.8d: List of Birds recorded along the Kurumbalur Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 3 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 4 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 5 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 6 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

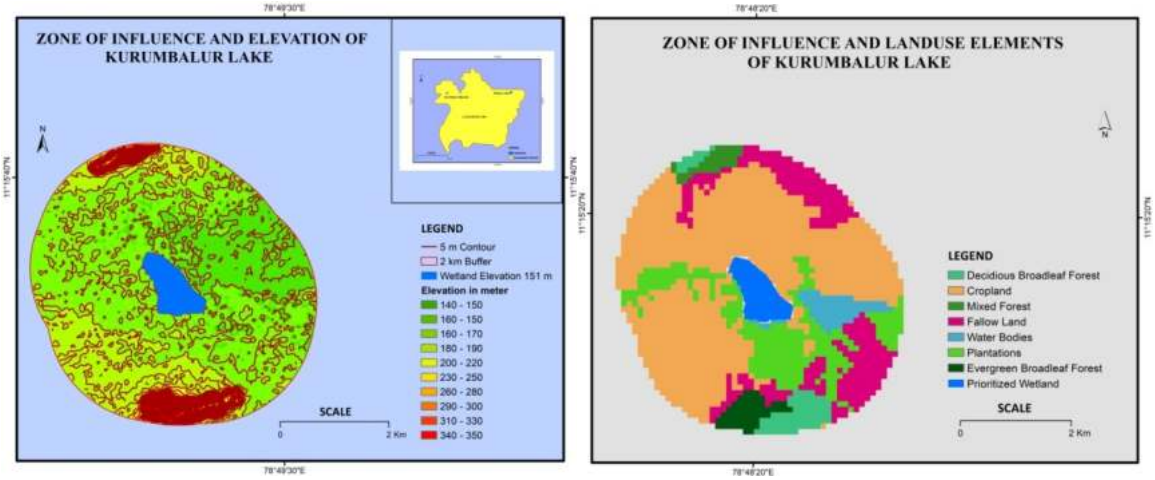
Table 17.8e: List of Mammals recorded along the Kurumbalur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Spotted Deer | *Axis axis* | Cervidae | Least Concern |

**Map 17.6: Comparative Google imagery for Kurumbalur Lake**




**Map 17.7: The zone of influence around the Kurumbalur Lake.**



## 18. Pudukkottai District

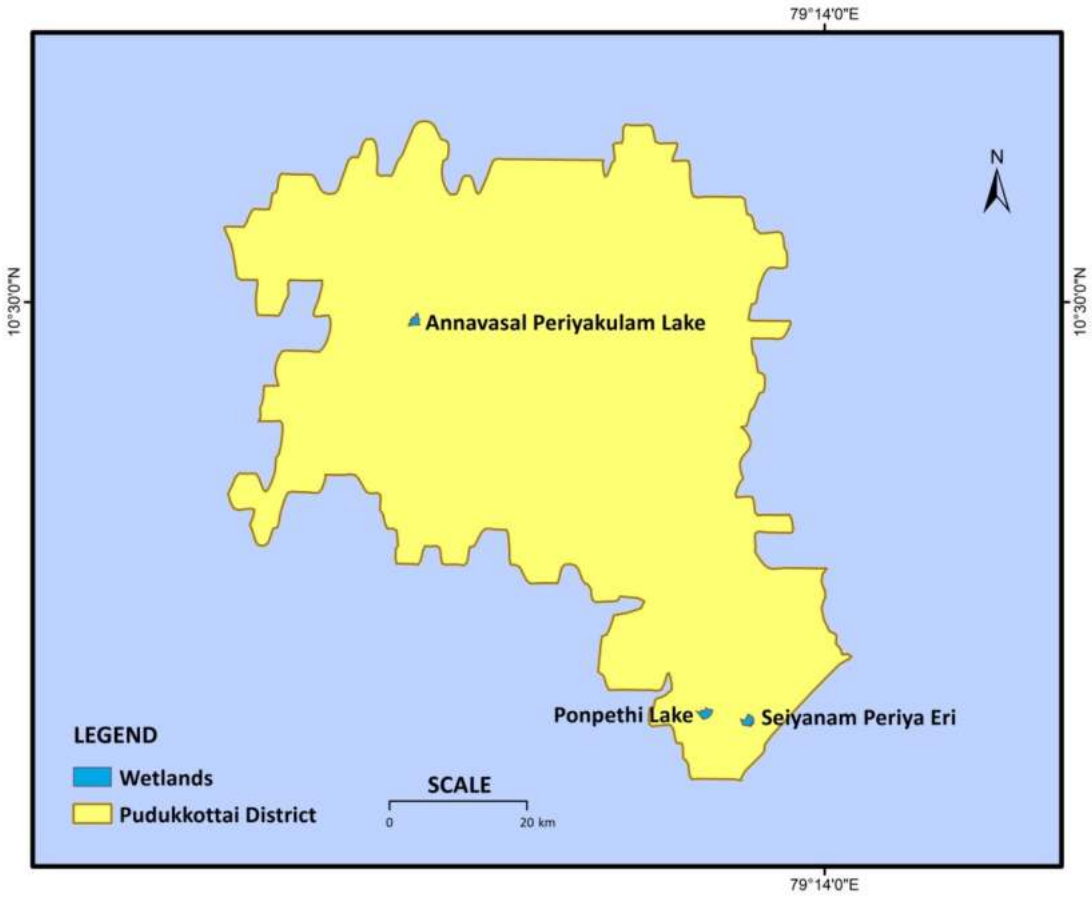
### Introduction

Pudukkottai District is bounded by Tiruchirappalli district in the North and West, Sivaganga district in the South, Bay of Bengal in the East and Thanjavur district in the North East. Most of the part of this district lies in the coastal region. The coastal area extends 39 kms. The Western portion is 600 feet above mean sea level tapers towards the East and reaches the Sea level.

Pudukkottai district as one of the princely states of Tamilnadu holds rich cultural heritage with Fortresses, Palaces, Temples, Cave Paintings and many other historical monuments. The Palaces, Fortress, Canals and Tanks built during the reign of ancient Tamil Kings are the place of interest. Besides, Temple in Avudayarkovil, Kudumiyanmalai, Chitthannavasal are very much prominent. There is a sacred place for Muslims at pallivasal and a Christian monument at Avur. Peacock sanctuary at Viralimalai, cave temples, temples built on the mountains are major tourism destinations.

Total geographic area of Pudukkottai is 4663 km². Total area under wetland is 72402 ha, which includes 1681 small wetland (<2.25 ha). Lakes/Ponds occupies 53.82% of wetland area. The second major wetland type is Tanks/Ponds. There are 2628 Tanks/Ponds with 26419 ha area (36.49%).

For the preparation of the brief document the Annavasal Periyakulam wetland was selected based on its size the number of villages and the ecological importance to the locals (Map 18.1)




**Map 18.1: Wetlands of Pudukkottai District Assessed for Prioritization**

**Observations**

Of the three wetlands selected in the district, Ponpethi is the largest while AnnavasalPeriyakulam is the smaller of the three wetlands. Around the three wetlands, we recorded 58 plant species both aquatic and terrestrial including 12 invasive species (Table 18.1). The faunal components totaled 99 species with the representation of 46 bird species including the wetland birds. Annavasal Periyakulam was dry at the time of sampling while the other two were Oligotrophic in status (Table 18.2). The water quality in both the wetlands was good. The soil at AnnavasalPeriyakulam showed hydric quality.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Elandaikudam wetland. Mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation

1. Annavasal Periyakulam Lake
2. Seiyanam Periya Eri
3. Ponpethi Lake

Table18.1: The flora and fauna recorded form the wetlands of Pudukkottai District

| S. No | Name of the Wetland | Plants | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | AnnavasalPeriyakulam Lake | 14(9) | 5 | 2 | 9 | 1 | 0 | 0 | 1 | 17 | 5 |
| 2 | SeiyanamPeriya Eri | 26(3) | 5 | 6 | 12 | 0 | 7 | 1 | 1 | 22 | 3 |
| 3 | Ponpethi Lake | 33(4) | 7 | 6 | 12 | 0 | 6 | 1 | 2 | 32 | 3 |
| | Total | 58(12) | 10 | 8 | 16 | 1 | 10 | 2 | 2 | 46 | 5 |

Table18.2: The water and soil quality assessed form the wetlands of Pudukkottai District

| District Name | Pudukkottai | | |
|---|---|---|---|
| Wetland Name | Seiyanam Periya Eri | Ponpethi Lake | Annavasal Periyakulam Lake |
| Wetland area (ha) | 205 | 212 | 171 |
| Buffer Area in Hectare (ha) | 2479.41 | 2565.95 | 2476.15 |
| Air Temperature °C | 36 | 34 | 34.7 |
| Water Temperature °C | 32.3 | 30.4 | |
| Humidity % | 54 | 55 | 41 |
| Nutrients in Water | Oligotrophic | Oligotrophic | Unknown |
| Water pH | 7.25 | 7.2 | |
| Water TDS ppm | 180 | 180 | |
| Water Conductivity ppm | 254 | 103.8 | |
| Light Penetration cms | 33 | 25 | |
| Water Salinity ppt | 0.123 | 0.055 | |
| DO mg/L | 4.47 | 2.85 | |
| PO4P mg/L | 0.017 | 0.021 | |
| Water Na ppm | 1006 | 1118 | |
| Water K ppm | 5.5 | 3.2 | |
| Water Li ppm | 0.3 | 0.4 | |
| Water Ca ppm | 94.8 | 110.5 | |
| Soil Colour code | 7.5YR 5/4 | 5YR 4/4 | 10YR 6/4 |
| Soil Colour | Brown | Reddish Brown | Light Yellowish Brown |
| Soil pH | 7.36 | 7.4 | 6.78 |
| Soil TDS ppm | 48.6 | 75.5 | 2.15 |
| Soil Conductivity ppm | 68.5 | 106.1 | 3040 |
| Soil Salinity ppt | 0.037 | 0.055 | 1.58 |
| Soil Na ppm | 4.2 | 4.2 | 221 |
| Soil K ppm | 1.9 | 3.4 | 55.3 |
| Soil Li ppm | 0 | 0 | 0.8 |
| Soil Ca ppm | 4.8 | 7.3 | 219 |

**Annnavasal Periyakulam Lake**

**Lake Survey Number:** 115

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Annavasal Periyakulam Lake or Big lake(Plate 41).

1.2 Villages that surround the wetland include Annavasal, Velanchar, Keelakuruchi.

1.3 & 1.4 The lake is based in Pudukkottai district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 28'14.9" N; 10° 28'27.1" N; 10° 28'22.7" N; 10° 28'15.0" N; and Longitude: 078° 42'11.9" E; 078° 41'59.4" E; 078° 41'48.5" E; 078° 41'32.4" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 171 hectares (Map 18.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 125 to 128 meters (asl)

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is temporary in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the Thiruvuppur KavanmaduKanmai.
d) The pH of the water was not recorded as during the time of our visit the wetland was completely dry
e) The lake has fresh water as per the secondary information as the lake was dry we did not estimate the salinity
f) The wetland had *Ipomoea sp*. and was dominated by *Prosopis juliflora.*

2.6 Climatic setting

a) Rainfallfor the month of February 2018 in Karur was 0.0 mm.
b) The atmospheric temperature was 34.7°C and the humidity was 41 %

2.7 The area of zone of influence is 2476.15 hectares with a fixed buffer area of 2 kms around the wetland (Map 18.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 80%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2002 and 2017 is given in Map 18.2& 18.3.

**Section III- Biodiversity**

3.1 List of Plant species: 14 species of plants were recorded around the wetland during our visit ( Table 18.3).

3.2 List of animal species: 39 animal species including 4 domestic species were recorded during the survey (List attached - Table 18.4a-g)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 18.4a-g)

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The Village Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the Thiruvuppur Kavanmadu Kanmai.
4.3 Fishery is not undertaken as the wetland has only for around 3 months.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it is a water scarse area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage and as toilet.
4.12 There is no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland does not support any local fish species.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure with increasing encroachment and agriculture activities.
6.3 The wetland water quality and the ecological character is changing rapidly.

**Section VII Notification Category**

The wetland is not is a bird sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Annavasal Periyakanmai Lake**

There is no scientific literature available on the wetland

Table 18.3. List of Plant species recorded along the Annavasal Periyakulam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Delonix regia* | Flame Tree | | Fabaceae | Invasive | LC |
| 3 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 4 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 5 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 6 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 7 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 8 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 9 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 10 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 11 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 12 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 13 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 14 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 18.4a: List of Insects recorded along the Annavasal Periyakulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 18.4b: List of Butterflies recorded along the Annavasal Periyakulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 5 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 6 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 7 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 8 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 9 | Tawny Coster | *Acraea violae* | Acraeinae | Common |

Table 18.4c:List of Dragonflies recorded along the Annavasal Periyakulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 18.4d: List of Arachnida recorded along the Annavasal Periyakulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 18.4e: List of Reptiles recorded along the Annavasal Periyakulam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

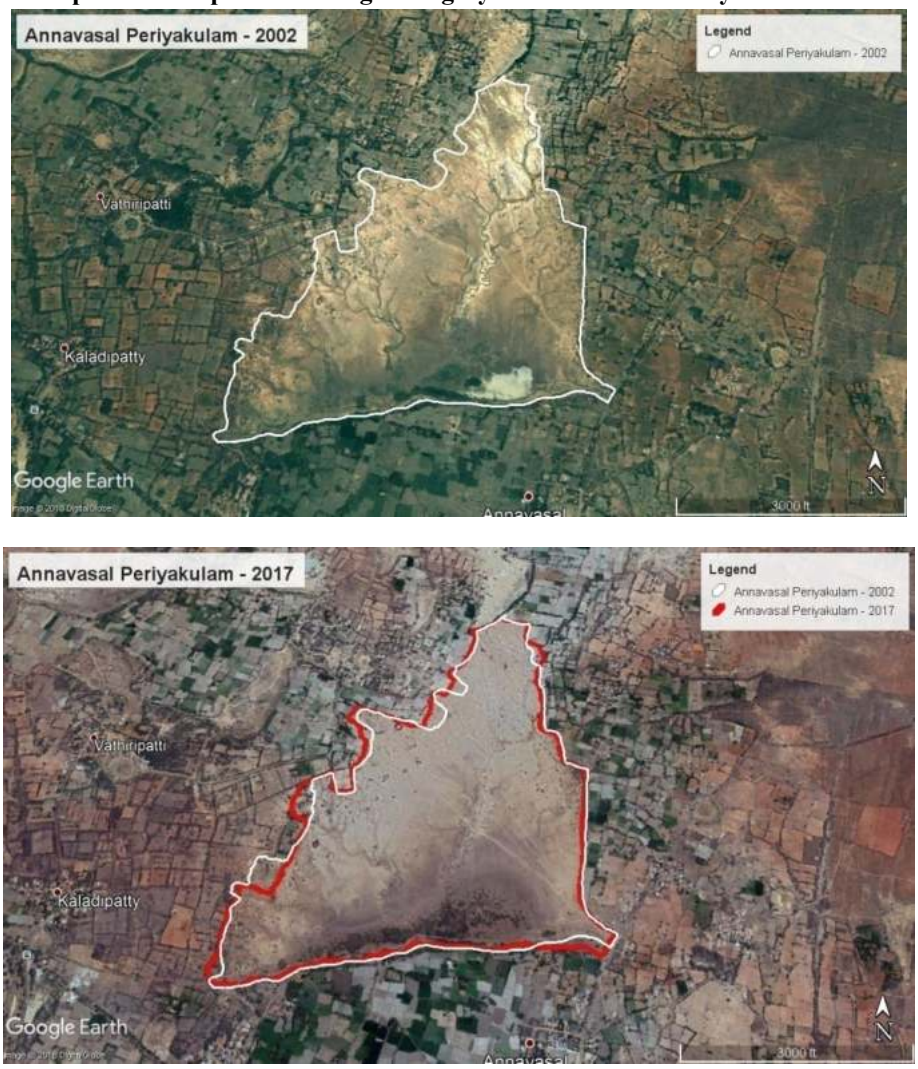
Table 18.4f: List of Birds recorded along the Annavasal Periyakulam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 2 | Yellow-wattled Lapwing | *Vandllus malabaricus* | Charadriidae | Least Concern |
| 3 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 4 | Chestnut-bellied Sandgrouse | *Pterocles exustus* | Pteroclidae | Least Concern |
| 5 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 6 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 7 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 8 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 9 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 10 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 11 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 12 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 13 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 14 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 15 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 16 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 17 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

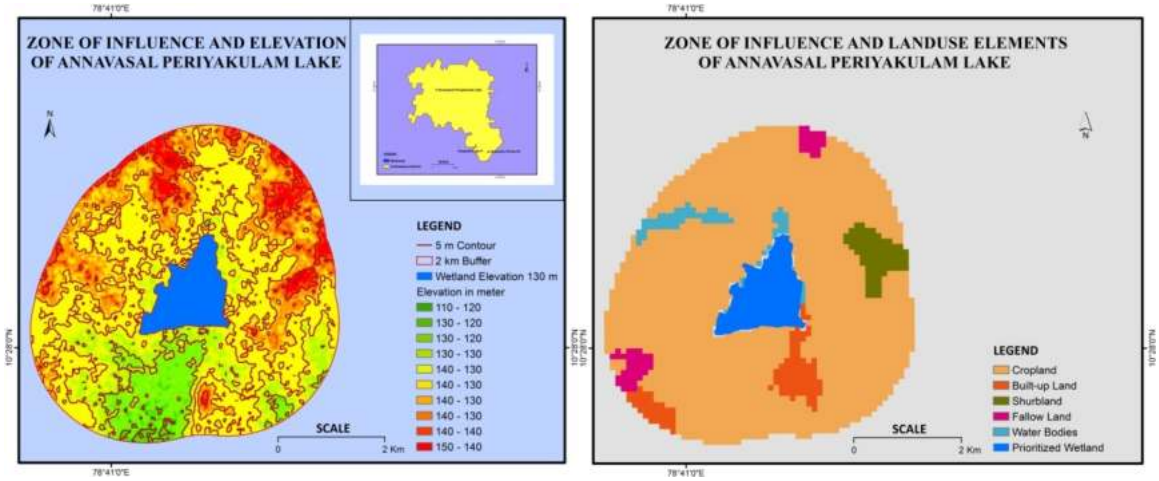
Table 18.4g: List of Mammals recorded along the Annavasal Periyakulam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 18.2: Comparative Google imagery for Annavasal Periyakulam Lake**




**Map 18.3: The zone of influence around the Annavasal Periyakulam Lake.**



**Ponpethi Lake**

**Lake Survey Number:** 153

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Ponpethi Lake (Plate 41).

1.2 Villages that surround the wetland include Ponpeti, Eddicheri, Pandimannayar kovil.

1.3 & 1.4 The lake is based in Avudaiar kovil taluka in Pudukkottai district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 57'25.1" N; 09° 57'23.4" N; 09° 57'21.6" N; 09° 57'19.5" N; 09° 57'14.9" N; and Longitude: 079° 04'56.2" E; 079° 04'53.7" E; 079° 04'49.4" E; 079° 04'38.2" E; 079° 04'44.8" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD division of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 212 hectares (Map 18.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 19 to 26 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.

b) The water in the wetland is temporatry in nature.

c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the Peranureri.

d) The pH of the water was 7.2

e) The lake has fresh water and the salinity was 0.055 ppt.

f) The wetland had aquatic vegetation like *Ipomoea sp*. and was dominated by *Prosopis juliflora.*

2.6 Climatic setting

a) Rainfallfor the month of February 2018 in Puthukottai was 0.0 mm.

b) The atmospheric temperature was 34°C and the humidity was 55 %

2.7 The area of zone of influence is 2565.15 hectares with a fixed buffer area of 2 kms around the wetland (Map 18.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 80%; | Settlements (rural) 20%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2005 and 2018 is given in Map 18.4 & 18.5.

**Section III- Biodiversity**

3.1 List of Plant species: 32 species of plants were recorded around the wetland during our visit (Table 18.5).

3.2 List of animal species: 69 animal species including 2 domestic species were recorded during the survey (Table 18.6a-h)

3.3 Species of Conservation importance: One Threatened species of bird was observed during the survey (Table 18.6a-h)

3.4 Major Plant invasive alien species and extent of invasion: Four invasive plants namely including *Prosopis juliflora* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The Village Panchayat provides drinking water from the borewell water and Cauvery water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the Peranur eri.
4.3 Fishery is not undertaken on commercial basis as the wetland has water only for around 4 months.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff from the surrounding area as it is a water scarse area.
4.10 The wetland has some temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is used rarely used by the locals for dumping garbage and as toilet.
4.12 There is no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does not support any local fish species.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure with increasing agriculture activities.
6.3 The wetland water quality and the ecological character is changing rapidly.

**Section VII Notification Category**

The wetland is not is a bird sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat from landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There are no such activities observed as of now.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available on the wetland.

Table 18.5: List of Plants recorded along the Ponpethi Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 2 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Ziziphusoenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 5 | *Cayratiatrifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 6 | *Crotalaria globosa* | Spherical Rattlepod | | Fabaceae | Native | |
| 7 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 8 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 9 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 10 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 11 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 12 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 13 | *Corallocarpusepigaeus* | Red fruit creeper | | Cucurbitaceae | Native | NA |
| 14 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 15 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 16 | *Azima tetracantha* | Needle Bush, Mistletoe Berrythorn | Sugam cheddi, Sangilai | Salvadoraceae | Native | NA |
| 17 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 18 | *Pergularia daemia* | Pergularia | Uttamani, Seendhalkodi | Apocynaceae | Native | NA |
| 19 | *Cordia dichotoma* | Indian cherry, Clammy cherry, Fragrant manjack | naruvili, citam, naruvali | Ehretiaceae | Native | |
| 20 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 21 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 22 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 23 | *Pedalium murex* | Large caltrops | Yanainerunji,Peruneru nji | Pedaliaceae | Native | NA |
| 24 | *Barleria acuminata* | Long-flower Barleria | VellaiKurinji | Acanthaceae | Native | NA |
| 25 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 26 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 27 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 28 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 29 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 30 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 31 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 32 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 18.6a: List of Insects recorded along the Ponpethi Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Cow bug | *Oxyrachis tarandus* | Membracidae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 18.6b: List of Butterflies recorded along the Ponpethi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |

| | | | | |
|---|---|---|---|---|
| 6 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 12 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |

Table 18.6c: List of Odonates recorded along the Ponpethi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 18.6d: List of Amphibians recorded along the Ponpethi Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Forg | *Euphlyctis hexadactylus* | Dicroglossidae | LC |

Table 18.6e: List of Fishes recorded along the Ponpethi Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 2 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 3 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 4 | *Macrobrachium rosenbergii* | Giant River Prawn | NanderIraal | Palaemonidae | LC |
| 5 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 6 | *Glossogobius giuris* | Tank goby | Uluvaimeen | Gobiidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 18.6f: List of Reptiles recorded along the Ponpethi Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 18.6g: List of Birds recorded along the Ponpethi Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 10 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 11 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 12 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 13 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 14 | Yellow-wattled Lapwing | *Vandllus malabaricus* | Charadriidae | Least Concern |
| 15 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 16 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 17 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 18 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 19 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 20 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 21 | Blue-faced Malkoha | *Rhopodytes viridirostris* | Cuculidae | Least Concern |
| 22 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 23 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 24 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 25 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 26 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 27 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 28 | Jerdon'sBushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 29 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 30 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 31 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 32 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

Table 18.6h: List of Mammals recorded along the Ponpethi Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

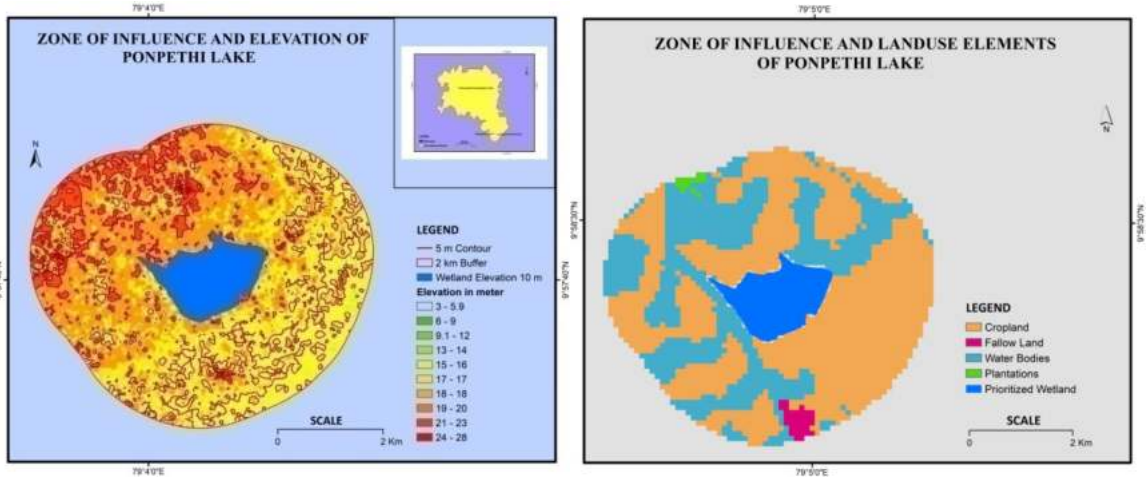
**Map 18.4: Comparative Google imagery for Ponpethi Lake**







**Map 18.5: The zone of influence around the Ponpethi Lake.**



**Seiyanam Periya Eri**

**Lake Survey Number:** 1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Seiyanam Kanmai (Plate 42) and Seiyanam periyaeri.

1.2 Villages that surround the wetland include Sayakudi, Melaendhal, keezhaembal.

1.3 & 1.4 The lake is based in Manamel taluka in Pudukkottai district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 56'44.1" N; 09° 56'45.0" N; 09° 56'44.9" N; 09° 56'42.2" N; 09° 56'51.1" N; and Longitude: 079° 07'48.3" E; 079° 07'49.8" E; 079° 07'52.3" E; 079° 07'58.2" E; 079° 07'81.3" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD and revenue division of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 205 hectares (Map 18.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 12 to 17 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is temporatry in nature.
c) The water from the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining ponds and goes into the sea.
d) The pH of the water was 7.25.
e) The lake has fresh water and the salinity was 0.123 ppt.
f) The wetland had aquatic vegetation like *Ipomoea sp*. and was dominated by *Prosopis juliflora.*

2.6 Climatic setting

a) Rainfallfor the month of February 2018 in Puthukottai was 0.0 mm.
b) The atmospheric temperature was36°C and the humidity was 54 %

2.7 The area of zone of influence is 2585.95 hectares with a fixed buffer area of 2 kms around the wetland (Map 18.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 25%; | Grasslands/scrublands 0%; |
| Agricultural lands 75%; | Settlements (rural) 0% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2005 and 2018is given in Map 18.6 & 18.7.

**Section III- Biodiversity**

3.1 List of Plant species: 25 species of plants were recorded around the wetland during our visit (Table 18.7).

3.2 List of animal species: 57 animal species including 2 domestic species were recorded during the survey (Table 18.8a-h).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 18.8a-h).

3.4 Major Plant invasive alien species and extent of invasion: Three invasive plants including *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded..

**Section IV Ecosystem services**

4.1 The water from the wetland is not used for drinking purpose. The Village Panchayat provides drinking water from the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the sea about a km form the wetland.
4.3 Fishery is undertaken on tender basis as the wetland has water only for around 4 months.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it is a water scarse area.
4.10 The wetland has one temple along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is used rarely used by the locals for dumping garbage and as toilet.
4.12 There is no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does not support any local fish species.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure with increasing agriculture activities.
6.3 The wetland water quality and the ecological character is changing rapidly.
6.4 The wetland is used for agriculture by individuals form outside the villages around the wetland.

**Section VII Notification Category**

The wetland is not is a bird sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat from landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The wetland encroachment practices into the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further. The Eucalyptus plantation by the forest department should be addressed with care.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for**

There is no scientific literature available on the wetland.

Table 18.7: list of Plants recorded along the Seiyanam Periya Eri

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 2 | *Prosopis juliflora* | Algaroba | Seemaikaruvel | Fabaceae | Invasive | NA |
| 3 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 4 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 5 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 6 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 7 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 8 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 9 | *Merremiae marginata* | Kidney leaf morning glory | Elikkadhukeerai | Convolvulaceae | Native | LC |
| 10 | *Barleria cuspidata* | Spiny Barleria, lesser yellow nail dye | mancat-cemmulli, vellai-mulli | Acanthaceae | Native | |
| 11 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 12 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 13 | *Jatropha gossypiifolia* | Bellyache Bush | SiriaAmanakku | Euphorbiaceae | Native | NA |
| 14 | *Flueggeavirosa* | Common Bushweed | Rubulai, pula, varadbula, vedbula, vellaipula | Phyllanthaceae | Native | |
| 15 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 16 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 17 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 18 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 19 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kottikizhangu | Aponogetonaceae | Native | LC |
| 20 | *Cyperus dubius* | White Water Sedge | Velutthanirbasi | Cyperaceae | Native | LC |
| 21 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 22 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 23 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 24 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 25 | *Marsileaquadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 18.8a: List of Insects recorded along the Seiyanam Periya Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Assassin Bug | *Reduviidae sp.* | Reduviidae |
| 2 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 18.8b: List of Butterflies recorded along the Seiyanam Periya Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 6 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 7 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 8 | Dark Grass Blue | *Zizeeriakarsandra* | Polyommatinae | Common |
| 9 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 10 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 11 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 12 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |

Table 18.8c: List of Odonates recorded along the Seiyanam Periya Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 18.8d: List of Amphibians recorded along the Seiyanam Periya Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 18.8e: List of Fishes recorded form the Seiyanam Periya Eri

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (ValarpuKendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Neimeen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravaimeen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thellimeen | Cichlida | LC |
| 7 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, NE-Near Extinct, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 18.8f: List of Reptiles recorded along the Seiyanam Periya Eri

| S. No | Common Name | Scientific Name | Family | |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

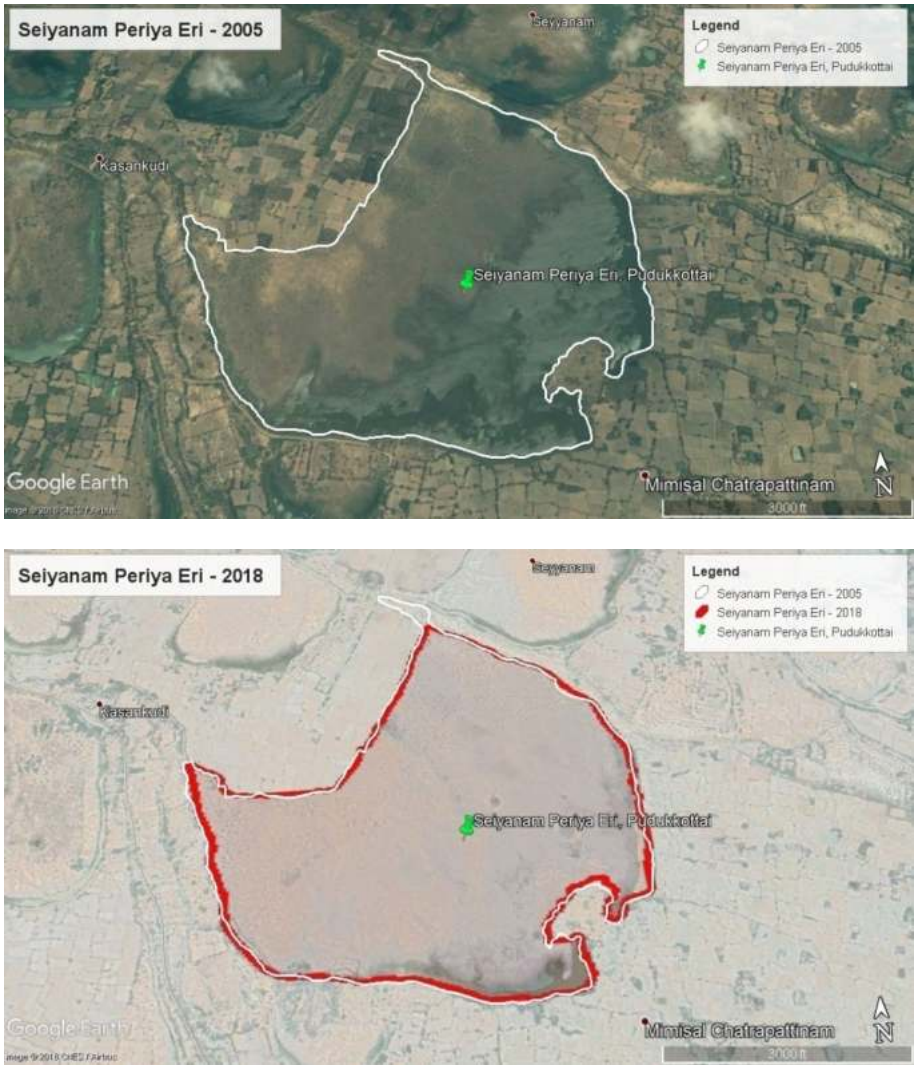
Table 18.8g: List of Birds recorded along the Seiyanam Periya Eri

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 5 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 6 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 7 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 8 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 9 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 10 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 11 | Laughing Dove | *Stigmatopelia senegalensis* | Columbidae | Least Concern |
| 12 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 13 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 14 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 15 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 16 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 17 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 18 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 19 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 20 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 21 | Oriental Magpie Robin | *Copsychus saularis* | Muscicapidae | Least Concern |
| 22 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

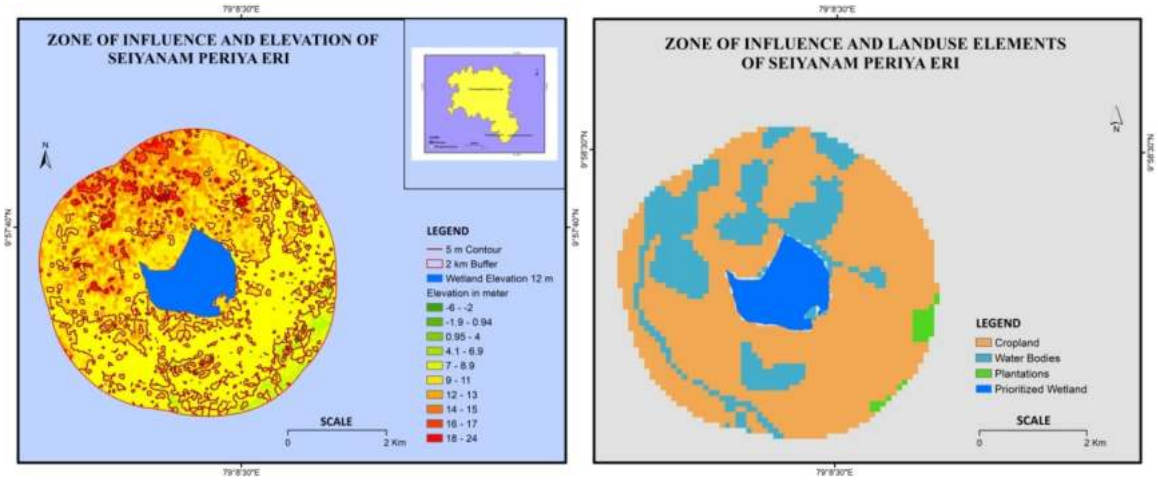
Table 18.8h: List of Mammals recorded along the Seiyanam Periya Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrushircus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 18.6: Comparative Google imagery for Seiyanam Periya Eri**




**Map 18.7: The zone of influence around the Seiyanam Periya Eri.**



## 19. Ramanathapuram District

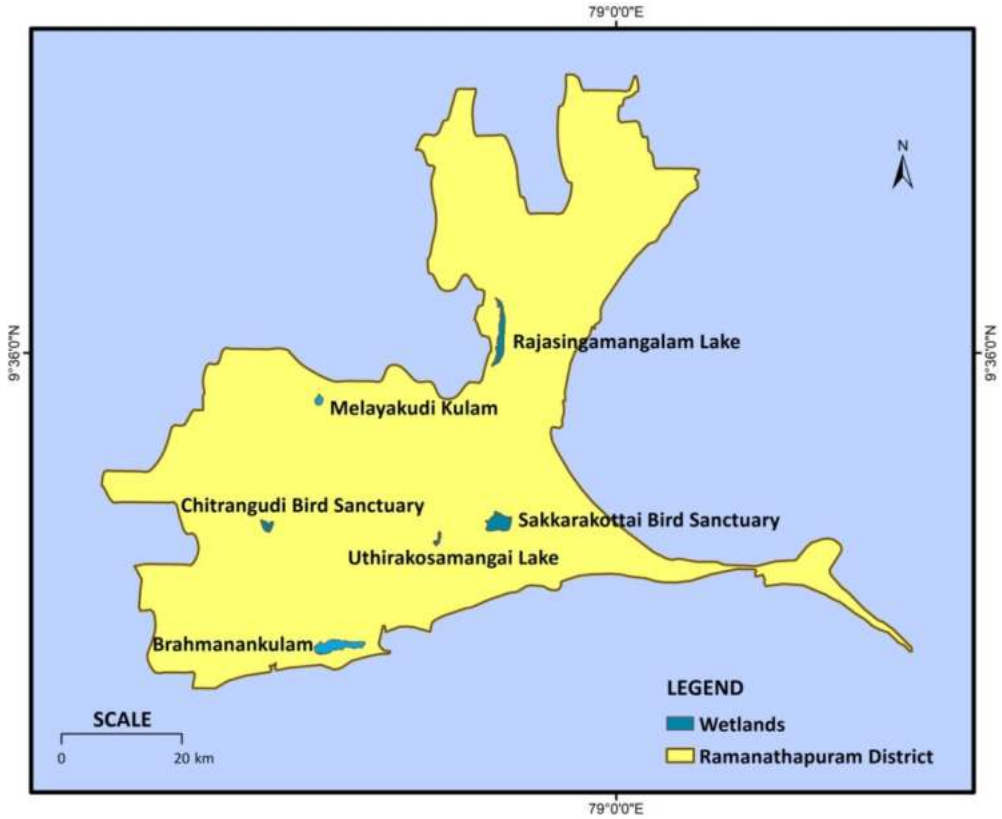
### 1. Introduction

Ramanathapuram has been under the rule of the Nayakas, Pandiyan and Chola dynasties. It has also been ruled by the Marathas, the Mughals and the British until Independence. This district is bound by Virudunagar and Tuticorin districts in the West and Sivagangai and Pudukuttai districts in the North. On the East and South, the boundaries are palk bay and the Gulf of Mannar. The district contains the Indian portion of Rama's Bridge, an east-west chain of low islands and shallow reefs that extend between India and the island nation of Sri Lanka, and separate the Palk Strait form the Gulf of Mannar. Total geographic area of Ramanathapuram is 4089.57 km². This district lies between 9º 05' and 9º 50' Northern latitudes 78º 10' and 79º 27' Eastern longitudes.

Ramanathapuram is close to Rameswaram and Devipattinam, both important pilgrimage centres. The Ervadi dargah is a major Islamic pilgrimage centre located 27 km form Ramanathapuram where Muslims form across the world come. Rameswaram is a holy place known to Hindus as a centre of pilgrimage for Shiva and Rama.

Total area under wetland is 73808 ha, which includes 1232 small wetland (<2.25 ha). Lakes/Ponds occupies 56.99% of wetland area. The second major wetland type is Tanks/Ponds. There are 1030 Tanks/Ponds with 12036 ha area (16.31%).

SACON during 2004 had prioritized four wetlands form Ramanathapuram district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these two wetlands to assess its present potential for conservation. (Map 19.1).




**Map 19.1: Wetlands of Ramanathapuram district assessed for Prioritization**

**Observations**

Of the six wetlands selected in the district, Brahmanankulam is the largest while Uthirakosamangai Lake is the smallest. Around the wetlands, we recorded 120 plant species both aquatic and terrestrial including 15 invasive species (Table 19.1). The faunal components totaled 112 species with the representation of 63 bird species including the wetland birds. The field study revealed that Rajasingo Mangalam was Eutrophic despite being dry wetland with high levels lesser elements in the soil. The other two dry wetlands include the Sakkarakottai Bird sanctuary and Melayakudi kulam wetlands showed hydric status (Table 19.2). The wetlands that contained water included the Oligotrophic Brahmanankulam, and the Mesotrophic Chitrangudi Bird Sanctuary and Uthirakosamangai.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Melayakudi Kulam
2. Rajasingamangalam Lake
3. Brahmanan kulam
4. Sakkarakottai Bird Sanctuary
5. Uthirakosamangai Lake
6. Chitirangudi Bird Sanctuary

Table 19.1: The flora and fauna recorded form the wetlands of Ramanathapuram District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Sakkarakottai Bird Sanctuary | 61(9) | 2 | 2 | 5 | 1 | 0 | 0 | 1 | 19 | 3 |
| 2 | Uthirakosamangai Lake | 51(9) | 9 | 5 | 6 | 1 | 8 | 0 | 1 | 21 | 2 |
| 3 | RajasingamangalamLake | 31(9) | 5 | 4 | 6 | 2 | 0 | 1 | 2 | 12 | 4 |
| 4 | Chitrangudi Bird Sanctuary | 38(10) | 9 | 4 | 11 | 2 | 5 | 0 | 2 | 43 | 2 |
| 5 | Brahmanan kulam | 8(2) | 0 | 3 | 4 | 0 | 0 | 0 | 3 | 26 | 3 |
| 6 | Melayakudi Kanmai | 13(3) | 3 | 2 | 5 | 0 | 0 | 0 | 2 | 9 | 0 |
| | Total | 120(15) | 11 | 5 | 14 | 2 | 9 | 1 | 3 | 63 | 4 |

Table 19.2: The water and soil quality assessed form the wetlands of Ramanathapuram District

| District Name | Ramanathapuram | | | | | |
|---|---|---|---|---|---|---|
| **Wetland Name** | Uthirakosamangai | Sakkarakottai Bird Sanctuary | Rajasingamangalam | Melayakudi Kulam | Brahmanan kulam | Chitirangudi Bird Sanctuary |
| **Wetland area (ha)** | 128 | 977 | 1002 | 167 | 1161 | 231 |
| **Buffer Area in Hectare (ha)** | 2489.19 | 3926.26 | 6345.39 | 2288.29 | 5165.33 | 2698.93 |
| **Air Temperature °C** | 27.7 | 30 | 29 | 37 | 32.6 | 28.5 |
| **Water Temperature °C** | 24.3 | | | | 30 | 30 |
| **Humidity %** | 65 | 75 | 55 | 42 | 75 | 50 |
| **Nutrients in Water** | Mesotrophic | Mesotrophic | Eutrophic | not known | Oligotrophic | Mesotrophic |
| **Water pH** | 7.4 | | | | 8.5 | 7.5 |
| **Water TDS ppm** | 115 | | | | 3675 | 2060 |
| **Water Conductivity ppm** | 600 | | | | 2945 | 405 |
| **Light Penetration cms** | 31 | | | | 50 | 8 |
| **Water Salinity ppt** | 0.102 | | | | 0.028 | 0.174 |
| **DO mg/L** | 6.91 | | | | 6.30 | 7.52 |
| **PO4P mg/L** | 0.137 | | | | 0.007 | 0.531 |
| **Water Na ppm** | 178 | | | | 10165 | 58.6 |
| **Water K ppm** | 13.3 | | | | 138.7 | 12.75 |
| **Water Li ppm** | 0 | | | | 3.2 | 0 |
| **Water Ca ppm** | 29.8 | | | | 2753 | 77.5 |
| **Soil Colour code** | 10YR 5/3 | 10YR 5/6 | 10 YR 6/4 | 10YR 7/4 | 7.5YR 5/3 | 10YR 5/2 |
| **Soil Colour** | Brown | Yellowish Brown | Light Yellowish Brown | Very Pale Brown | Brown | Grayish Brown |
| **Soil pH** | 7.98 | 7.07 | 7.32 | 7.04 | 7.18 | 7.71 |
| **Soil TDS ppm** | 214 | 66.9 | 83.6 | 101 | 3.99 | 135 |
| **Soil Conductivity ppm** | 302 | 94.4 | 116.5 | 141.9 | 5640 | 192 |
| **Soil Salinity ppt** | 0.145 | 0.049 | 0.059 | 0.071 | 3.05 | 0.093 |
| **Soil Na ppm** | 58.1 | 7.6 | 12.5 | 11.9 | 805.5 | 15.2 |
| **Soil K ppm** | 2.5 | 2 | 2.4 | 22.7 | 57 | 3.3 |
| **Soil Li ppm** | 0 | 0 | 0 | 0.1 | 0.8 | 0 |
| **Soil Ca ppm** | 16.6 | 5.1 | 6.9 | 11.3 | 106.5 | 13.5 |

**Bramanan kulam**

**Lake Survey number**: Not Provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Bramanan kulam (Plate 43).

1.2 Villages that surround the wetland include Melakadar, S. Mariyur.

1.3 & 1.4 The lake is based in Kadaladi taluka in Ramanathapuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 09'12.0" N; 09° 09'55.0" N; 09° 10'17.3" N; 09° 10'29.0" N; and Longitude: 078° 32'14.0" E; 078° 38'11.4" E; 078° 38'02.7" E; 078° 38'11.7" E;

1.6 The wetland is a not a Protected Areabut it is under the control of the salt board..

1.7 The wetland comes under the jurisdiction of Salt pan board, Ramanathapuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 1161 hectares (Map 19.2).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal saltpan.

2.3 Based on the secondary information the average depth is 1 meters for the wetland.

2.4 The elevation of the wetland is 6 to 14 meters (asl)..

2.5 Water regimes

a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area and form the Selvantur forest area and the adjoining sea (Gulf of Mannar)
b) The water in the wetland is mostly of intermittent nature.
c) The water also helps in the salt extraction.
d) The pH of the water was 8.02.
e) The lake has fresh water as the salinity was 0.028 ppt.
f) The wetland was observed to have maximum coastal vegetation along with the aquatic vegetation.

2.6 Climatic setting

a) Rainfall for the month of December in Madurai was 2.2 mm.
b) The atmospheric temperature was 32.6°C

2.7 The area of zone of influence is 5165.33 hectares with a fixed buffer area of 2 kms around the wetland (Map 19.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 10%; | Grassland & Shrubland 0 %; |
| Agriculture 0%; | Settlements (Rural) %; |
| Settlements (Urban) 0%; | Industries 10% saltpans 80% |

2.9 The comparison of the wetland for the years 2005 and 2018 is given in Map 19.2 & 19.3.

**Section III- Biodiversity**

3.1 List of Plant species: 6 species of plants were recorded around the wetland during our visit ( Table 19.3).

3.2 List of animal species: 39 animal species including 2 domestic species were recorded during the survey (Table 19.4a-e).

3.3 Species of Conservation importance: One Threatened specie of birds were observed during the survey (Table 19.4a-e).

3.4 Major Plant invasive alien species and extent of invasion: Two invasive plants including *Prosopis juliflora*, and *Parthenium hysterophorus* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The village has open dug wells and borewells for their regular needs. The salt pan is one of the livelihood for locals.

4.2 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.3 It is a major source of ground water recharge.

4.4 There are no agriculture or plantation activities within the wetland.

4.5 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Extraction of salt is a major activity under the government control and a private company.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There is no organized fishing activity.

6.3 The change in the land use will affect the livelihood of the locals and the habitat for birds.

**Section VII Notification Category**

The wetland is declared as sanctuary and received protection and conservation form the forest department and is below 2500m below Sea level. Under the Salt Pans board.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

Change in the land use pattern by the government.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There is no such activity observed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available for Brahmanan kulam

Table 19.3: List of Plants recorded along the Brahmanan kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 2 | *Sesuvium portulacastrum* | Sea purslane | Vankaravacci | Aizoaceae | Native | NA |
| 3 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 4 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 5 | *Salicornia brachiata* | | | Amaranthaceae | Native | |
| 6 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.4a: List of Butterflies recorded along the Brahmanan kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 19.4b: List of Odonates recorded along the Brahmanan kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 19.4c: List of Reptiles recorded along the Brahmanan kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 3 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 19.4d: List of Birds recorded along the Brahmanan kulam

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Greater Flaminngo | *Phoenicopterus roseus* | Phoenicopteridae | Least Concern |
| 2 | Eurasian Spoonbill | *Platalea leucorodia* | Threskiornithidae | Least Concern |
| 3 | Striated Heron | *Butorides striata* | Ardeidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 6 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 12 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 13 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 14 | Common Redshank | *Tringa totanus* | Scolopacidae | Least Concern |
| 15 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 16 | Little Stint | *Calidris minuta* | Scolopacidae | Least Concern |
| 17 | Caspian Tern | *Hydroprogne caspia* | Laridae | Least Concern |
| 18 | Lesser Crested Tern | *Thalasseus bengalensis* | Laridae | Least Concern |
| 19 | Greater Crested Tern | *Thalasseus bergii* | Laridae | Least Concern |
| 20 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 21 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 22 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 23 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 24 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 25 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 26 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

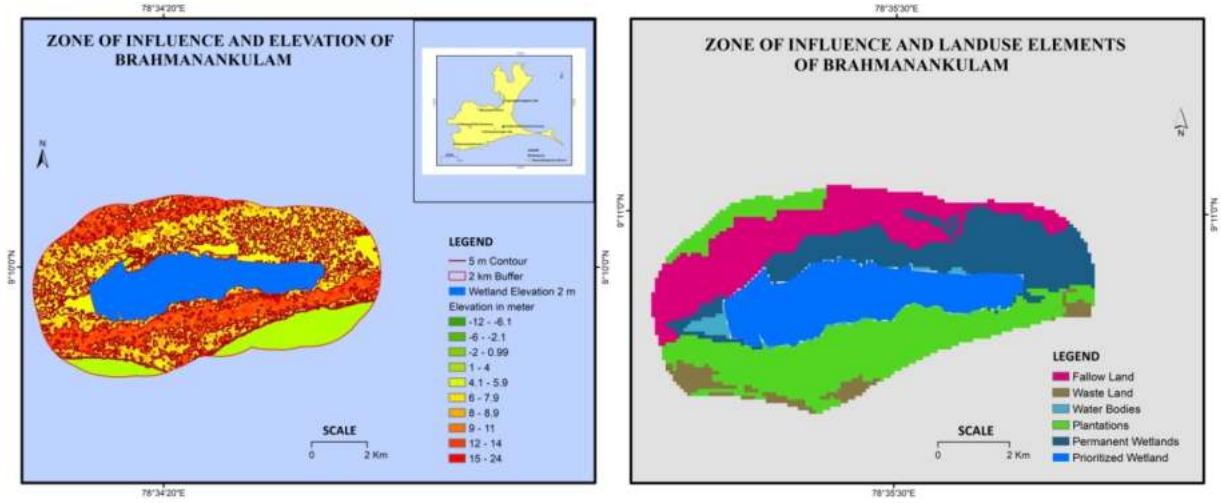
Table 19.4e: List of Mammals recorded along the Brahmanan kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 19.2: Comparative Google imagery for Brahmanan kulam Lake**




**Map 19.3: The zone of influence around the Brahmanan kulam.**



**Chitrangudi Bird Sanctuary**

**Lake Survey Number**: 159.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Chitrangudi Bird Sanctuary and Chitrangudi Lake (Plate 43).
1.2 Villages that surround the wetland include Chitrangudi, Poonghanpulli, Erachikulam, Keelakanchana kulam.
1.3 & 1.4 The lake is based in Ramanathapuram District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 09° 19'59.7" N; 09° 19'57.8" N; 09° 19'55.6" N; 09° 19'54.7" N; 09° 19'54.1"N and Longitude: 078°28'33.3"E; 078°28'36.7" E; 078°28'40.7" E; 078° 28'45.7" E; 078° 28'51.0" E
1.6 The wetland is a Protected Areaas it has been declared a Bird Sanctuary.
1.7 The wetland comes under the jurisdiction of Tamil Nadu Forest Department, Ramanathapuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 231 hectares (Map 19.4).
2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent lake.
2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.
2.4 The elevation of the wetland is 33 to 36 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area and form the Vaigai River and Gundaru River.
   b) The water in the wetland is mostly of intermittent nature with now frequent occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
   c) The water also helps in replenishing the groundwater.
   d) The pH of the water was 7.5.
   e) The lake has fresh water as the salinity was 0.174 ppt.
   f) The wetland was observed to have maximum terrestrial vegetation along with the aquatic vegetation.
2.6 Climatic setting
   a) Rainfall for the month of December in Madurai was 2.2 mm.
   b) The atmospheric temperature was 28.5°C
2.7 The area of zone of influence is 2698.93 hectares with a fixed buffer area of 2 kms around the wetland (Map 19.5).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 30%; | Grassland & Shrubland 5 %; |
| Agriculture 60%; | Settlements (Rural) 5%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map19.4 & 19.5.

**Section III- Biodiversity**

3.1 List of Plant species: 35 species of plants were recorded around the wetland during our visit (Table 19.5).
3.2 List of animal species: 78 animal species including One domestic species were recorded during the survey (Table 19.6a-i)
3.3 Species of Conservation importance: One near Threatened specie of birds were observed during the survey (Table 19.6a-i)
3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion – Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The village has open dug wells and borewells for their regular needs.
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 Fishery is not undertaken permission in the lake, but the fish is cultured to provide for the birds in the sanctuary.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetlands receive good population of Nature enthusiast as tourist to the Bird Sanctuary.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The forest department undertakes regular desiltation activities during the summer season to maintain the depth of the lake.
4.10 The wetland does have two temples religious institutions along its bank, a few cultural activities are organized around the wetland.
4.11 The wetland is used by locals for agriculture and extraction of water only.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a diversity of fishery although the commercial fishery is not practiced.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of ground water for agriculture as the agriculture is practiced within the wetland.
5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is no organized fishing activity.
6.3 There are a few invasive plant species that are changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is declared as sanctuary and received protection and conservation form the forest department and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form lack of water availability due to scarcity of rains.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There is no such activity observed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Chithirangudi Bird Sanctuary


Collar N.J., Andreev A.V., Chan S., Crosby M.J., Subramanya S., Tobias J. A., Rudyanto. and Crosby M.J. (2001) Spot-billed pelican (*Pelecanus philippensis*) Threatened birds of Asia, Birdlife International (2001) Threatened birds of Asia: the Birdlife International Red Data Book. Cambridge, UK: Birdlife International, Page 68-103, ISBN 0 946888 442.

Kannan V. and Ranjit Manakadan (2005) The status and distribution of Spot-billed Pelican *Pelecanus philippensis* in Southern India. *Forktail.* 21: 9–14.

Murali Krishnan S., Arun Nagendran N. and Pandiaraja D. (2017) Survey of Birds in Chitrangudi and Kanjirankulam Village ponds in relation to vegetation: An Avian paradise of South India. *Journal of Entomology and Zoology Studies.* 5(1): 407-412.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Roopa Bandekar., Roshni Kutty., Shantha Bhushan, Kaustubh Moghe., Batool Balasinorwala. and Tasneem Balasinorwala. (2009) Community conservation in Tamil Nadu, Kalpavriksh 2009, Page 1-30.

Vaithianathan Kannan. and Jeganathan Pandiyan. (2012) Nesting Ecology of the Spot-Billed Pelican *Pelecanus Philippensis* in Southern India. *World Journal of Zoology.* 7(4): 295-302.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 19.4: List of Plant species recorded along the Chithirangudi Bird Sanctuary

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 5 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 6 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 7 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 8 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 9 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 12 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 13 | *Citrullus colocynthis* | Bitter Apple, Colocynth, | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 14 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 15 | *Trianthema portulacastrum* | Desert Horse Purslane | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 16 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 17 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 18 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 19 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 20 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, | Plumbaginaceae | Native | NA |
| 21 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 22 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 23 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 24 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 25 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 26 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 27 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 28 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 29 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 31 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 32 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 33 | *Colocasia esculenta* | Taro, Cocoyam, Green Taro | Sempu, Shamakkilangu | Araceae | Native | LC |
| 34 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 35 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 36 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.5a: List of Insects recorded along the Chithirangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Colour Grasshopper | *Neorthacris acuticeps* | Pyrgomorphidae |
| 4 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 8 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 19.5b: List of Diplopoda recorded along the Chithirangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 19.5c: List of Butterflies recorded along the Chithirangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 5 | Dark Grass Blue | *Zizeeria karsandra* | Polyommatinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 8 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 9 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 10 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 11 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 19.5d: List of Dragonflies recorded along the Chithirangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 19.5e: List of Arachnida recorded along the Chithirangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 19.5f: List of Fishes recorded form the Chithirangudi Bird Sanctuary

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.5g: List of Reptile recorded along the Chithirangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 2 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

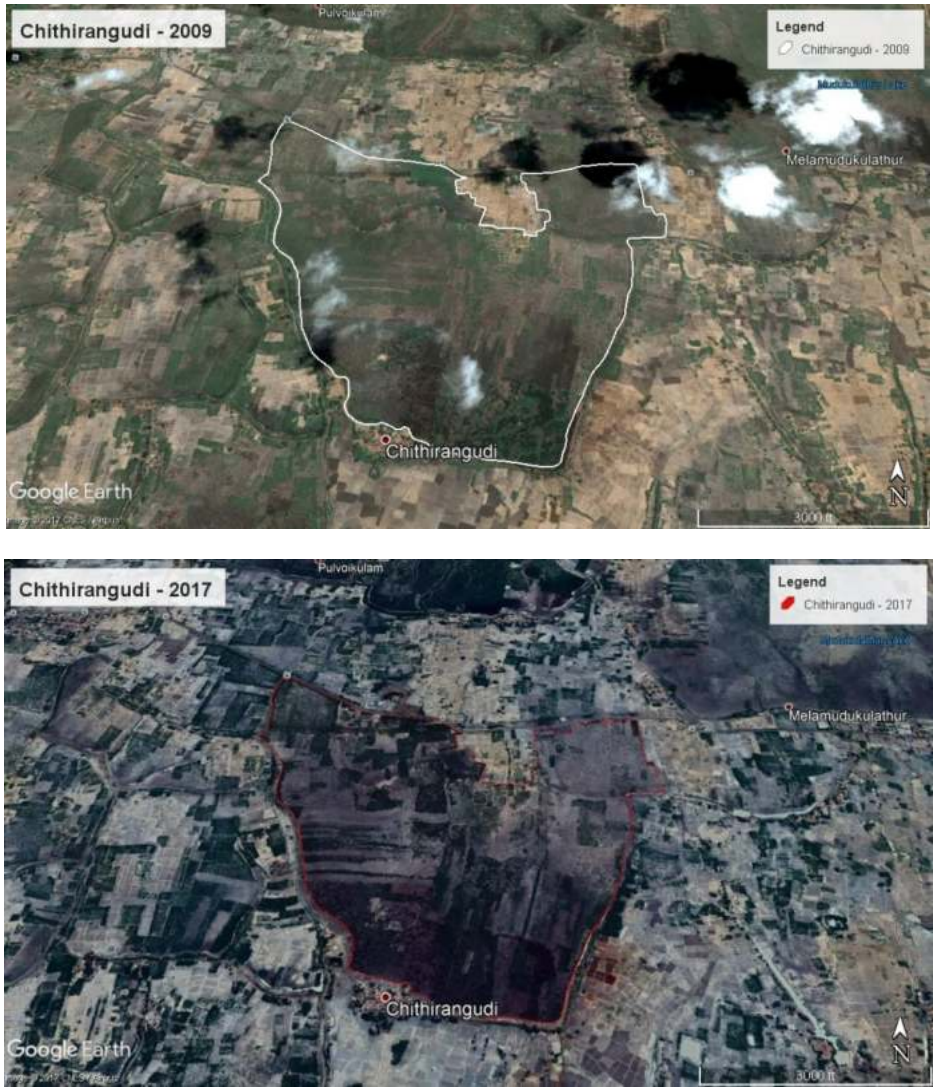
Table 19.5h: List of Birds recorded along the Chithirangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Red-naped Ibis | *Pseudibis papillosa* | Threskiornithidae | Least Concern |
| 5 | Striated Heron | *Butorides striata* | Ardeidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 10 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 11 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 12 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 13 | Oriental Honey-buzzard | *Pernis ptilorhynchus* | Accipitridae | Least Concern |
| 14 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 15 | Yellow-wattled Lapwing | *Vanellus malabaricus* | Charadriidae | Least Concern |
| 16 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 17 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 18 | Red Collared Dove | *Streptopelia tranquebarica* | Columbidae | Least Concern |
| 19 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 20 | Laughing Dove | *Stigmatopelia senegalensis* | Columbidae | Least Concern |
| 21 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 22 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 23 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 24 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 25 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 26 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 27 | Coppersmith Barbet | *Megalaima haemacephala* | Megalaimidae | Least Concern |
| 28 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 29 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 30 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 31 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 32 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 33 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 34 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 35 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 36 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 37 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 38 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 39 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 40 | Rosy Starling | *Pastor roseus* | Sturnidae | Least Concern |
| 41 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 42 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 43 | Chestnut-shouldered petronia | *Gymnoris xanthocollis* | Passeridae | Least Concern |

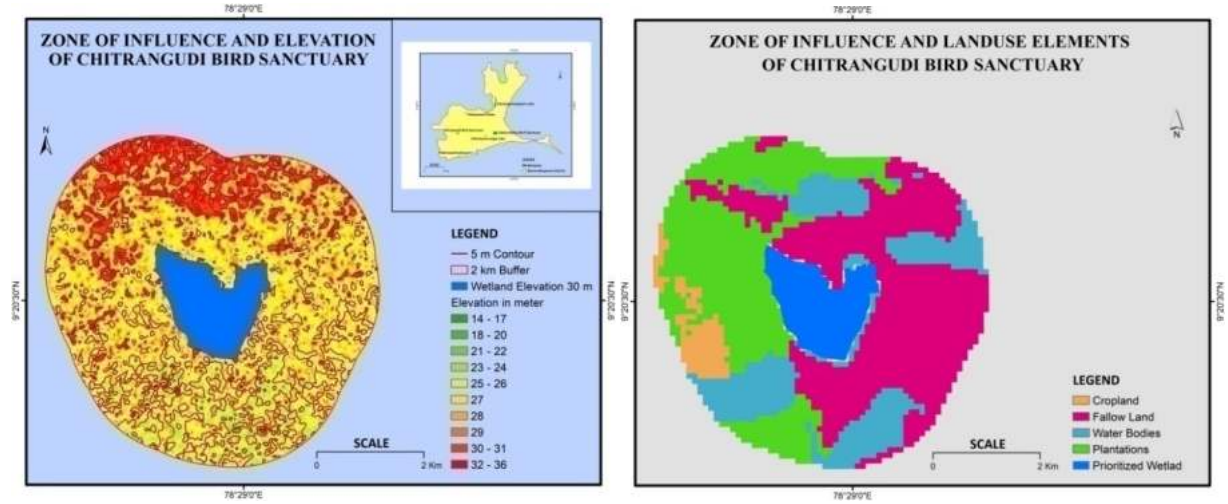
Table 19.5i: List of Mammals recorded along the Chithirangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 19.4: Comparative Google imagery for Chithirangudi Bird Sanctuary**




**Map 19.5: The zone of influence around the Chithirangudi Bird Sanctuary.**



**Melayakudi Kulam**

**Lake Survey Number**: 1.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Melyakudikulam also known as kattaparambukudi kanmai (Plate 44).

1.2 Villages that surround the wetland include Melayakudi..

1.3 & 1.4 The lake is based in Paramagudi taluka in Ramanathapuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 32'35.8" N; 09° 32'36.0" N; 09° 32'32.3" N; and Longitude: 078° 34'11.7" E; 078° 34'05.7" E; 078° 34'04.0" E;

1.6 The wetland is a not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Ramanathapuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 167 hectares (Map 19.6).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category in the sub category seasonal intermittent Lake.

2.3 Based on the secondary information the average depth is 1 to 1.5 meters for the wetland.

2.4 The elevation of the wetland is 49 to 58 meters (asl)..

2.5 Water regimes

a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area and form the Vaigai River.
b) The water in the wetland is mostly of intermittent nature.
c) The water also helps in the ground recharge.
d) The pH of the water was not taken as the wetland was dry during our visit
e) The lake has fresh water as informed by the locals.
f) The wetland was observed to have maximum terrestrial vegetation only.

2.6 Climatic setting

a) Rainfall for the month of December in Madurai was 2.2 mm.
b) The atmospheric temperature was 37.6°C and the humidity was 42 %.

2.7 The area of zone of influence is 2288.29 hectares & varies between 0.1 to 0.96 kms (Map 19.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 10%; | Grassland & Shrubland 0 %; |
| Agriculture 95%; | Settlements (Rural) 0 %; |
| Settlements (Urban) 0%; | Industries 0% others Construction 5 % |

2.9. The comparison of the wetland for the years 2011 and 2018 is attached (Map 19.6 & 19.7).

**Section III- Biodiversity**

3.1 List of Plant species: 12 species of plants were recorded around the wetland during our visit (Table 19.7).

3.2 List of animal species: 21 animal species were recorded during the survey (Table 19.14a-e)

3.3 Species of Conservation importance: Threatened specie of birds were not observed during the survey (Table 19.8a-e)

3.4 Major Plant invasive alien species and extent of invasion: Three invasive plants including *Prosopis juliflora*, formed nearly 80 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The village has open dug wells and borewells for their regular needs. The municipality provides the Cauvery water for the regular needs.

4.2 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.3 It is a major source of ground water recharge.

4.4 There are no agriculture or plantation activities within the wetland.

4.5 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There is no organized fishing activity.

6.3 The change in the land use will affect the livelihood of the locals and the habitat for birds.

6.4 The wetland has faced drought situation for the past three years and the land use pattern is changing.

**Section VII Notification Category**

The wetland is declared as sanctuary and received protection and conservation form the forest department and is below 2500m below Sea level. Under the Salt Pans board.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

Change in the land use pattern by the government.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There is no such activity observed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no published literature available for Melayakudi Kulam

Table 19.7: List of Plants recorded along the Melayakudi Kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 3 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 4 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 5 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 6 | *Ixora coccinea* | Torchwood Tree | Culuntu, Koran | Rubiaceae | Native | NA |
| 7 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 8 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 9 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 10 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 11 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 12 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.8a: List of Insects recorded along the Melayakudi Kulam

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 19.8b: List of Butterflies recorded along the Melayakudi Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 19.8c: List of Odonates recorded along the Melayakudi Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 19.8d: List of Reptiles recorded along the Melayakudi Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 19.8e: List of Birds recorded along the Melayakudi Kulam

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 3 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 4 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 5 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 6 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 7 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 8 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 9 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

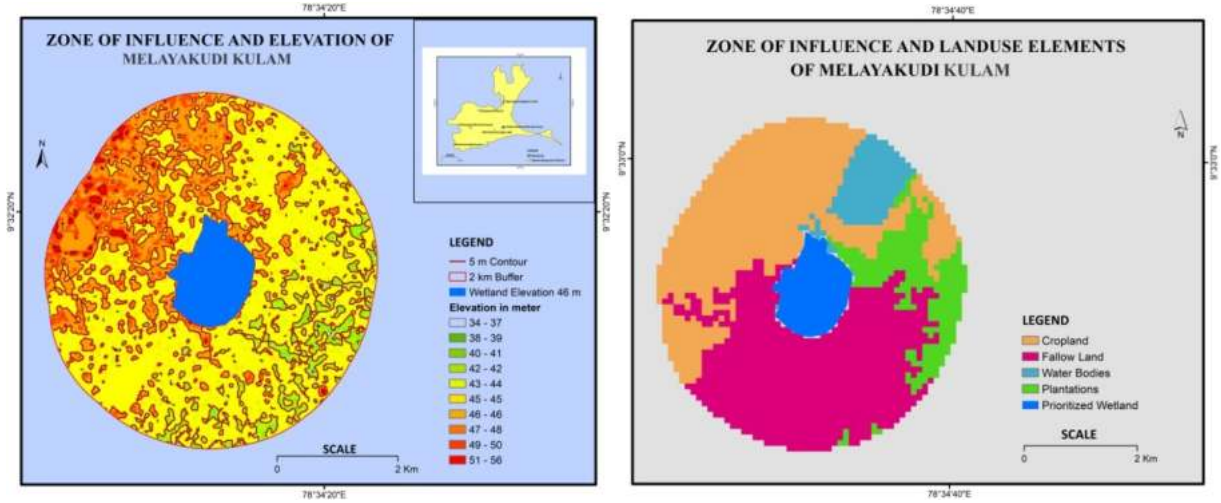
**Map 19.6: Comparative Google imagery for Melayakudi Kulam**







**Map 19.7: The zone of influence around the Melayakudi Kulam**



**Rajasingamangalam Lake**

Rajasingamangalam Lake was conceived as a balancing reservoir to store the flood flows of the Vaigai. This tank connects both the Vaigai and Sarugani Rivers and is capable of absorbing floods form both the Rivers and designed to feed 72 smaller tanks.

**Lake Survey Number:** 1.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as R.S. Mangalam Lake (Plate 44). also known as Periya Kanamai, Rajasingamangalam lake, Varavani Lake.

1.2- Villages that surround the wetland include Rajasingamangalam, Pullamadai, Potthar Devan Kottai, Varavani Alagu Devan Kottai, Thumbadaika kottai,

1.3 & 1.4 The lake is based in Ramanathapuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 38'13.6" N; 09° 38'13.2" N; 9° 38'05.4" N; 9° 38'14.7" N and Longitude: 078° 49'55.8" E; 078° 49'59.8" E; 078° 49'59.4" E; 078° 50'00.2" E;

1.6 The wetland is not a Protected area.

1.7 The wetland comes under the jurisdiction of PWD, Ramanathapuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 1002 hectares (Map 19.68).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category in the sub category intermittent seasonal lakes (water is present for a few weeks during the monsoon).

2.3 Based on the secondary information the average depth is 6 meters for the wetland.

2.4 The elevation of the wetland is 20 to 22 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and the channel connecting the Vaigai River.

b) The water in the wetland is intermitent nature with some water present only for a few weeks during the rains, as the wetland is mostly dependant on the rainfall and runoff waters and the Vaigai River, during our visit the wetland was completely dry.

c) The water form the wetlands help in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.

d) The pH of the water was not assessed as there was no water

e) The lake has fresh water as informed by the locals.

f) The wetland was completely dry and the aquatic vegetation like *Ipomoea sp* and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January 2018 in Ramanathapuram was 2.2 mm.

b) The atmospheric temperature, salinity and pH were not recorded as the water was not present in the wetland.

2.7 The area of zone of influence is 6345.39 hectares with a fixed buffer area of 2 kms around the wetland (Map 19.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands 10 %; |
| Agricultural lands 70 %; | Settlements (Rural) 20%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 19.8 & 19.9.

**Section III- Biodiversity**

3.1 List of Plant species: 31 species of plants were recorded around the wetland during our visit (Table 19.9).

3.2 List of animal species: 36 animal species including 3 domestic species were recorded during the survey (Table 19.10a-h)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 19.10a-h)

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The are few farmlands where agriculture is undertaken around the wetland using borewell water.

4.3 Fishery is not undertaken.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no runoff form the surrounding area as it is a water deficient area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing through the wetland.

4.11 The site is majorly used by the locals for grazing their cattle and goats.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle and sheep is undertaken.

5.5 There is no withdrawal of water for agriculture or fishery purpose.

5.6 The wetland has faced drought for the past 5-7 years.

5.7 The locals are well aware of the importance of the wetland however, the scanty rains and the lack of water in the wetland was disturbing.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The wetland has been facing drought condition for the past 5 years.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated. These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for R.S. Mangalam Lake**

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Seenivasan R. (2014) Historical Validity of Mullaperiyar Project. *Economic and Political Weekly*. 49(4): 22-26.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532

Table 19.9: List of Plant species recorded along the Rajasingamangalam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Portulaca oleracea* | Indian Parselane | Paruppu keerai, | Portulacaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 5 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 6 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 7 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 8 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 11 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 12 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 13 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 16 | *Tylophora indica* | Indian Ipecac | kalutai-p-palai, | Apocynaceae | Native | |
| 17 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 18 | *Tecoma stans* | Yellow bells | Sonnapatti | Bignoniaceae | Exotic | NA |
| 19 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 20 | *Stachytarpheta jamaicensis* | Blue Porterweed | Seemai Nayuruvi | Verbenaceae | Native | NA |
| 21 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 22 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 23 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 24 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 25 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 26 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 27 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 28 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 29 | *Phyllanthus niruri* | Stone Breaker | Keezhanelli | Phyllanthaceae | Native | NA |
| 30 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 31 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.10a: List of Insects recorded along the Rajasingamangalam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 19.10b: List of Butterflies recorded along the Rajasingamangalam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 3 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 5 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 6 | Joker | *Byblia ilithyia* | Biblidinae | Common |

Table 19.10c: List of Dragonflies recorded along the Rajasingamangalam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 19.10d: List of Arachnida recorded along the Rajasingamangalam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 19.10e: List of Amphibian recorded form the Rajasingamangalam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.10f: List of Reptile in Rajasingamangalam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 19.10g: List of Birds recorded along the Rajasingamangalam Lake

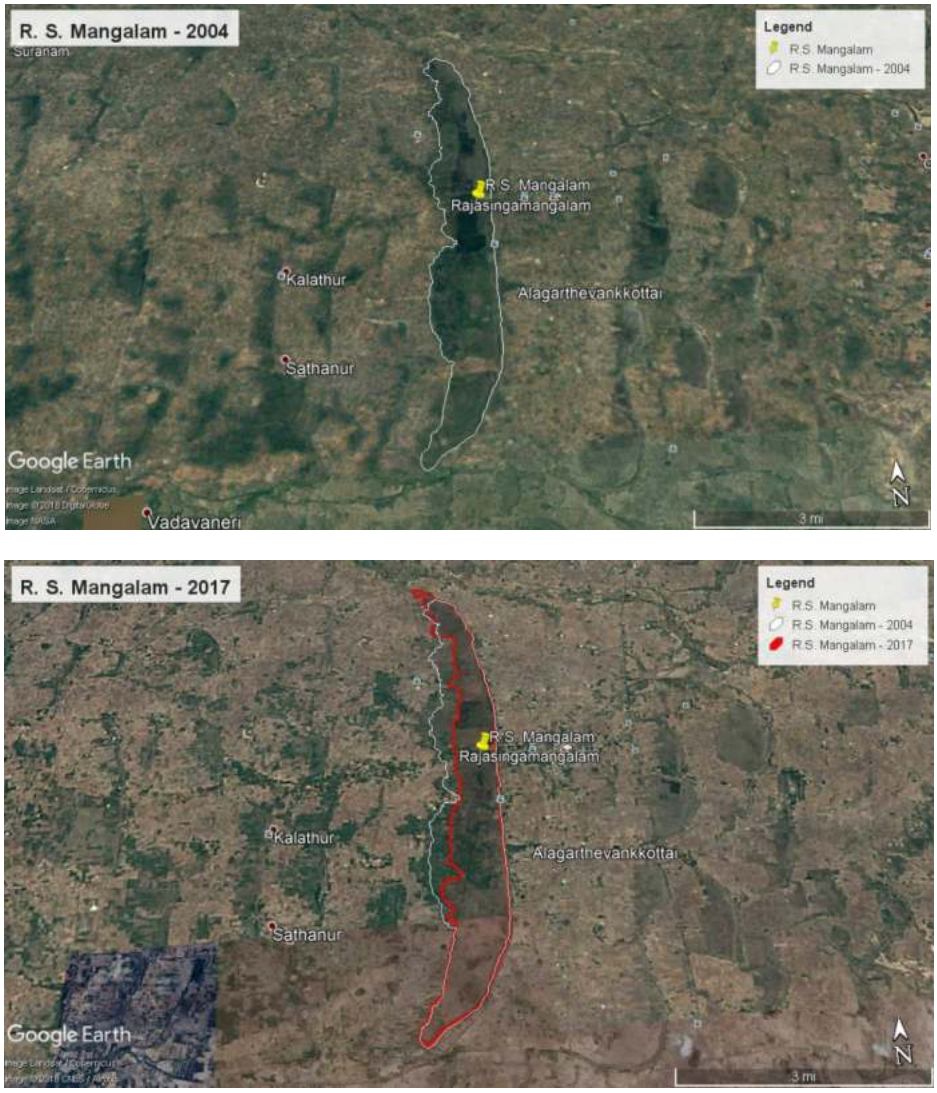
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | LC |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | LC |
| 3 | Cattle Egret | *Bubulcus ibis* | Ardeidae | LC |
| 4 | Common Pigeon | *Columba livia* | Columbidae | LC |
| 5 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | LC |
| 6 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | LC |
| 7 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | LC |
| 8 | House Crow | *Corvus splendens* | Corvidae | LC |
| 9 | Plain prinia | *Prinia inornata* | Cisticolidae | LC |
| 10 | Common Myna | *Acridotheres tristis* | Sturnidae | LC |
| 11 | Purple rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | LC |
| 12 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

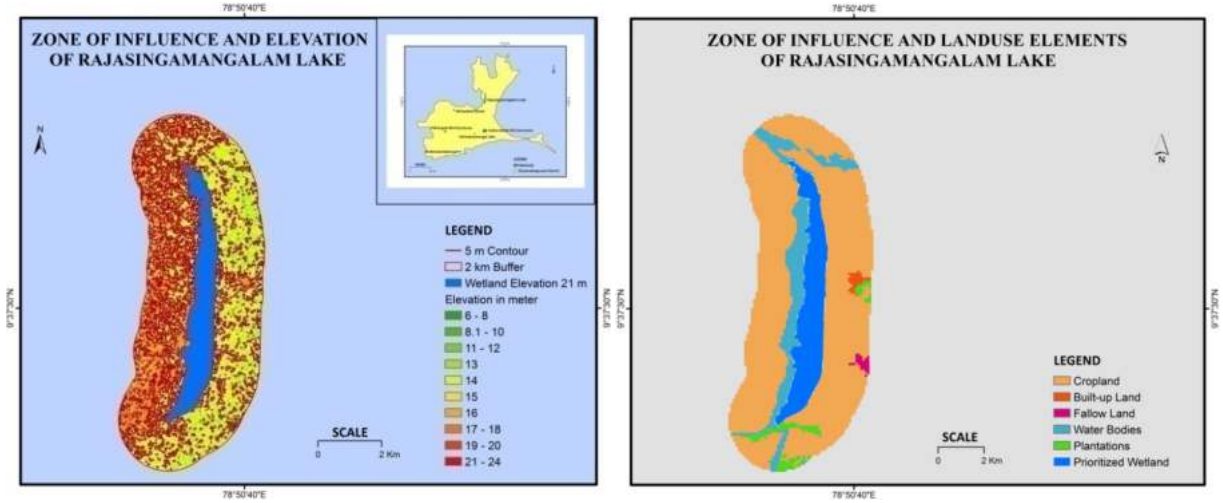
Table 19.10h: List of Mammals recorded along the Rajasingamangalam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 19.8: Comparative Google imagery for Rajasingamangalam Lake**




**Map 19.9: The zone of influence around the Rajasingamangalam lake.**



**Sakkarakottai Bird Sanctuary**

**Lake Survey Number**: 25, 68, 383, 289/1, 209, 209/3

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Sagarakottai Bird Sanctuary and Sagarakottai PeriyakanamaiLake (Plate 45).

1.2 Villages that surround the wetland include Sagarakottai, Rajasurya Madai, Amman Kovil, Pasuvon nagar, Devar Nagar, MSK Nagar, Pallkarai, Vannikudi.

1.3 & 1.4 The lake is based in Ramanathapuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 20'12.5" N; 09° 20'05.3" N; 09° 20'02.8" N; 09° 20'01.0" N; and Longitude: 078° 50'25.7" E; 078° 50'17.8" E; 078° 50'03.2" E; 078° 49'53.9" E;

1.6 The wetland is a Protected Area as it has been declared a Bird Sanctuary during 2016.

1.7 The wetland comes under the jurisdiction of PWD Ramanathapuram division but the bird sanctuary is with the forest department.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 977 hectares (Map 19.10).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 3.0 meters for the wetland.

2.4 The elevation of the wetland is 13 to 15 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Vaigai River.
b) The water in the wetland is mostly of intermittent nature with now frequent occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was not recorded as the wetland was completely dry at the time of our visit.
e) The lake has fresh water as informed by the locals.
f) The wetland was observed to have maximum terrestrial vegetation along with the aquatic vegetation. Moreover the forest department has permitted the locals to undertake agriculture activities to control the spread of invasives.

2.6 Climatic setting

a) Rainfall for the month of December in Ramanathapuram was 2.2 mm.
b) The atmospheric temperature, pH and salinity was not documented

2.7 The area of zone of influence is 3926.26 hectares with a fixed buffer area of 2 kms around the wetland (Map 19.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 10 %; | Grassland and Scrubland 10%; |
| Agriculture 70%; | Settlements (Rural) 10%; |
| Settlements (Urban) 0%; | Industries 0%. |

2.9 The comparison of the wetland for the years 2004 and 2017 is given in Map 19.10 & 19.11.

**Section III- Biodiversity**

3.1 List of Plant species: 63 species of plants were recorded around the wetland during our visit (Table 19.11).

3.2 List of animal species: 33 animal species including 3 domestic species were recorded during the survey (Table 19.12a-g)

3.3 Species of Conservation importance: One near Threatened specie of birds were observed during the survey (Table 19.12a-g)

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: There are no invasive faunal species as the wetland is completely seasonal and the water exist for only around a month.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. However, three wells are dug in the wetland form which the drinking water is extracted.
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 Fishery is undertaken without any permissions, recreational fishery is also practiced whenever water is available. But there has been a drought for nearly 5 years.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 Recently it has been declared as a sanctuary hence it is expected that the wetland will be used for tourism.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland does not have any several temples and other religious institutions along its bank, no other cultural activity is organized around the wetland.
4.11 The wetland is used by locals for agriculture and extraction of water only.
4.12 There are agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a diversity of fishery although the commercial fishery is not practiced.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of ground water for agriculture as the agriculture is practiced within the wetland.
5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 There is no organized fishing activity.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has some amount of solid waste dumping and encroachment activities. The siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

The wetland is declared as sanctuary during 2016 and received protection and conservation form the forest department and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chanel should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Sakkarakottai Lake


Kannan V. and Ranjit Manakadan. (2005) The status and distribution of Spot-billed Pelican *Pelecanus philippensis* in Southern India. *Forktail.* 21: 9–14.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas. Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Subramanya S. (2005) Heronries of Tamil Nadu. *Indian Birds*. 1(6): 125-148.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 19.11: List of Plant species recorded along the Sakkarakottai Bird Sanctuary

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 2 | *Ceiba pentandra* | Kapok, Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 3 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 4 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 5 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 6 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 7 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 8 | *Delonix regia* | Flame Tree | | Fabaceae | Invasive | LC |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 11 | *Peltophorum pterocarpum* | Copperpod, Rusty shield bearer, Peela gulmohar | konraivagai | Fabaceae | Introduced | NA |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 14 | *Senna tora* | Stinking Cassia, Chinese senna, Foetid cassia,Java bean, Low senna,Peanut weed, Sickle senna, Sicklepod | Senavu | Fabaceae | Native | NA |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 17 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 18 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 19 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 20 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 21 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 22 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 23 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 24 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 25 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 26 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 27 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 28 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 29 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 30 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 31 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 32 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 33 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 34 | *Evolvulus alsinoides* | Dwarf morning glory,Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 35 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 36 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 37 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 38 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 39 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 40 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 41 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 42 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 43 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 44 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 45 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 46 | *Euphorbia tirucalli* | Pencil Tree, Firestick Plants, Indian Tree Spurge, Naked Lady, Pencil Tree, Pencil Cactus, Sticks on Fire | Cakkalavi, catukalavi, kalli | Euphorbiaceae | Naturalized | LC |
| 47 | *Jatropha tanjorensis* | Tanjore jatropha | | Euphorbiaceae | Native | NA |
| 48 | *Breynia vitis-idaea* | Mountain Coffee Bush | | Phyllanthaceae | Native | NA |
| 49 | *Phyllanthus maderaspatensis* | Madras Leaf flower | Nilanelli | Phyllanthaceae | Native | NA |
| 50 | *Flacourtia indica* | Governor's plum, Batoka plum, Flacourtia, Indian plum, Madagascar plum | Cottai-k-kala | Salicaceae | Native | NA |
| 51 | *Agave americana* | Agave, Century plant | | Asparagaceae | Introduced | |
| 52 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 53 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 54 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 55 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 56 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 57 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 58 | *Cyperus rotundus* | Common nut sedge, coco grass, nutgrass, purple nutsedge | Korai, korai kilangu, muthakasu | Cyperaceae | Native | LC |
| 59 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 60 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 61 | *Eleusine indica* | Indian crowfoot grass,Indian goose grass,Wiregrass | Thippa ragi, Keveru | Poaceae | Native | LC |
| 62 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 63 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.12a: List of Insects recorded along the Sakkarakottai Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 19.12b: List of Butterflies recorded along the Sakkarakottai Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |

| | | | | |
|---|---|---|---|---|
| 2 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 4 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 5 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 19.12c: List of Dragonflies recorded along the Sakkarakottai Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 19.12d: List of Arachnida recorded along the Sakkarakottai Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 19.12e: List of Reptile recorded along the Sakkarakottai Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

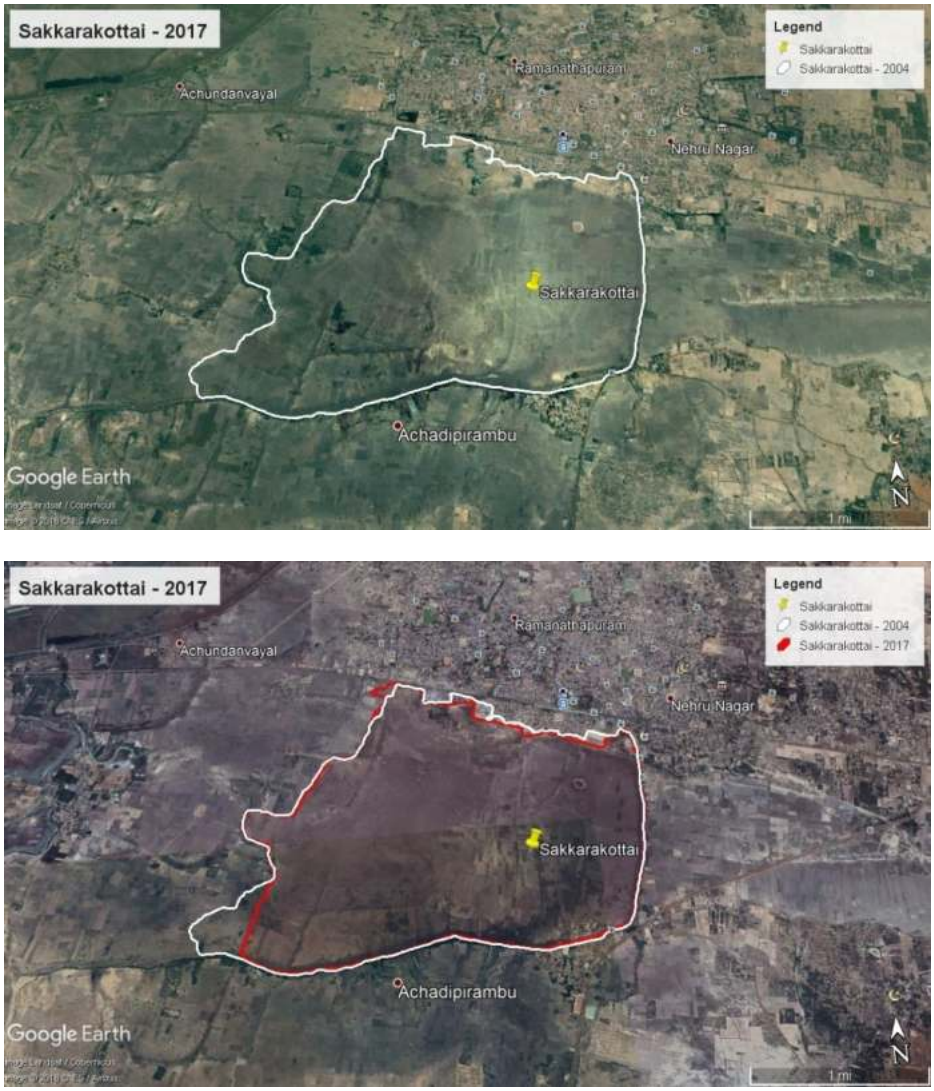
Table 19.12f: List of Bird recorded along the Sakkarakottai Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 3 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 4 | Brahminy Kite | *Haliastur indus* | Accipitridae | Least Concern |
| 5 | White Breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 6 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 7 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 8 | Laughing Dove | *Spilopelia senegalensis* | Columbidae | Least Concern |
| 9 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 10 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 11 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 12 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 13 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 14 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 15 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 16 | Plain prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 17 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 18 | Purple rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 19 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

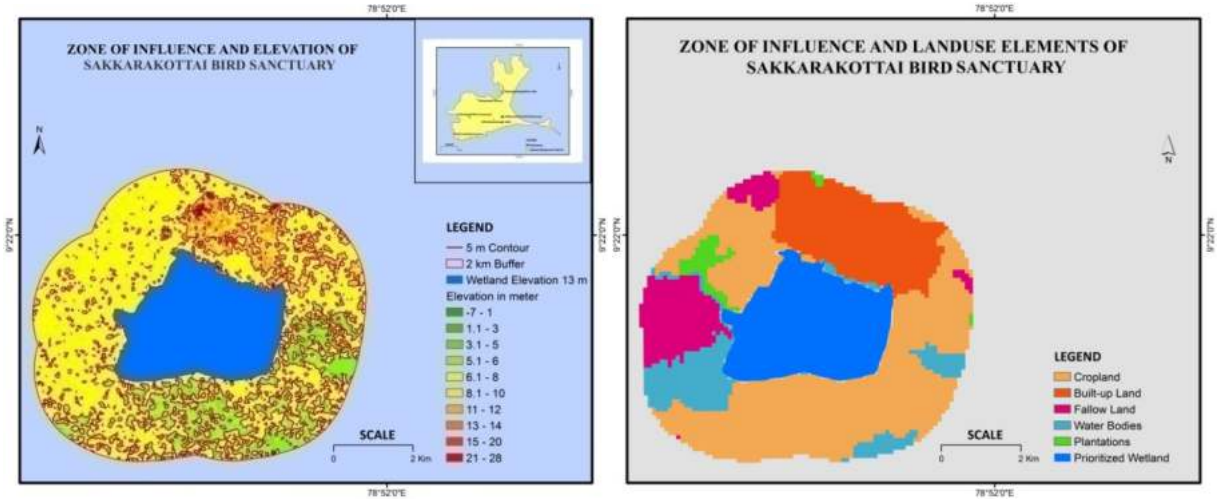
Table 19.12g: List of Mammals recorded along the Sakkarakottai Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |

**Map 19.10: Comparative Google imagery for Sakkarakottai Bird Sanctuary**




**Map 19.11: The zone of influence around the Sakkarakottai Bird Sanctuary**



**Uthirakosamangai Lake**

**Lake Survey Number:** 9, 86/1.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Uthirakosamangai Kanmai (Plate 45).

1.2 Villages that surround the wetland include Uthirakosamangai.

1.3 & 1.4 The lake is based in Ramanathapuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 19'03.6" N; 09° 18'57.9" N; 09° 18'55.0" N; 09° 18'53.6" N and Longitude: 078° 44'09.8" E; 078° 44'09.6" E; 078° 44'06.9" E; 078° 44'02.6" E;

1.6 The wetland is not a Protected area.

1.7 The wetland comes under the jurisdiction of PWD, Ramanathapuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 128 hectares (Map 19.12).

2.2 The Wetland type - the wetlands in belong to the Natural (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is -8 to 9 meters (asl)..

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and the channel connecting the Vaigai River.
b) The water in the wetland is intermitent nature with some water present only for a few months following the rains, as the wetland is mostly dependant on the rainfall and runoff waters and the Vaigai River, during our visit the wetland had some water.
c) The water form the wetlands help in replenishing the groundwater and the overflow feeds the Kallari lake.
d) The pH of the water was 7.4
e) The lake has fresh water as the salinity was 0.102 ppt.
f) The wetland banks were completely dry and the aquatic vegetation like *Ipomoea sp.* and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Ramanathapuram was 2.2 mm.
b) The atmospheric temperature was form 27.2 to 27.7 °C.

2.7 The area of zone of influence is 2489.19 hectares with a fixed buffer area of 2 kms around the wetland (Map 19.13).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands & Scrublands 0%; |
| Agricultural lands 90 %; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industries 0%. |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 19.12 & 19.13.

**Section III- Biodiversity**

3.1 List of Plant species: 49 species of plants were recorded around the wetland during our visit (Table 19.13).

3.2 List of animal species: 53 animal species including 2 domestic species were recorded during the survey (Table 19.14a-i)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 19.14a-i)

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the Cauvery River water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland using the wetland water and borewell water.
4.3 Fishery is not undertaken however the fishery was undertaken in the past but due to scarcity of rains in the past two years it is no longer undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no runoff form the surrounding area.
4.10 The wetland has the major Lord Siva and Parvathi temple as well as a few small temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing through the wetland.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture and plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.
4.15 Around the wetland there is no encroachment but solid waste dumping was observed on a minor scale. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 There is agriculture all around the wetland.
5.4 Grazing by the cattle and sheep is undertaken.
5.5 There is withdrawal of water for agriculture purpose.
5.6 The wetland has faced drought for the past 2 years.
5.7 The locals are well aware of the importance of the wetland however, the scanty rains and the lack of water in the wetland was disturbing.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.
6.2 The wetland has been facing drought condition for the past 2 years.
6.3 There is a good population of tourist that visits the historic temple that is also exerting pressure on the local resources.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned tourism and increasing sewage and effluents are a major threat that needs to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Uthiragosamangai Lake**

Sarojini Devi Boominathan., Suganthi Palanisamy., Suganthi Kanagaraj. and Govindaraju Munusamy. (2015) Mapping of Ground Water Quality for Ramanathapuram Taluk of Tamil Nadu Using Geographical Information System. *International Journal of Advanced Remote Sensing and GIS*. 4(1): 953-959.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532

Table 19.13: List of Plant species recorded along the Uthirakosamangai Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 5 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 11 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 12 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 13 | *Peltophorum pterocarpum* | Copperpod, Rusty shield bearer, Peela gulmohar | Konraivagai | Fabaceae | Introduced | NA |
| 14 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 15 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 16 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 17 | *Corallocarpus epigaeus* | Red fruit creeper | | Cucurbitaceae | Native | NA |
| 18 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 19 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 20 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 21 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 22 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 23 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 24 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 25 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 26 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 27 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 28 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 29 | *Physalis angulata* | Cutleaf Ground Cherry | | Solanaceae | Native | LC |
| 30 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 31 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 32 | *Andrographis echioides* | False waterwillow | Gopuram tangi | Acanthaceae | Native | NA |
| 33 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 34 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 35 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 36 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 37 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 38 | *Amaranthus spinosus* | Prickly Amaranth | Mullukkeerai | Amaranthaceae | Exotic | NA |
| 39 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 40 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 41 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 42 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 43 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 44 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 45 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 46 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 47 | *Echinochloa crus-galli* | Barnyard Grass | | Poaceae | Native | LC |
| 48 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 49 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.14a: List of Insects recorded along the Uthirakosamangai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Colour Grasshopper | *Neorthacris acuticeps* | Pyrgomorphidae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 6 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 19.14b: List of Diplopoda recorded along the Uthirakosamangai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 19.14c: List of Butterflies recorded along the Uthirakosamangai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 3 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 4 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 6 | Joker | *Byblia ilithyia* | Cyrestinae | Common |

Table 19.14d:List of Dragonflies recorded along the Uthiragosamangai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 19.14e: List of Arachnida recorded along the Uthiragosamangai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 19.14f: List of Fishes recorded form the Uthirakosamangai Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category | IASI |
|---|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU | IASI |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA | |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT | |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC | IASI |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC | |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC | |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC | |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC | |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 19.14g: List of Reptiles recorded along the Uthirakosamangai Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

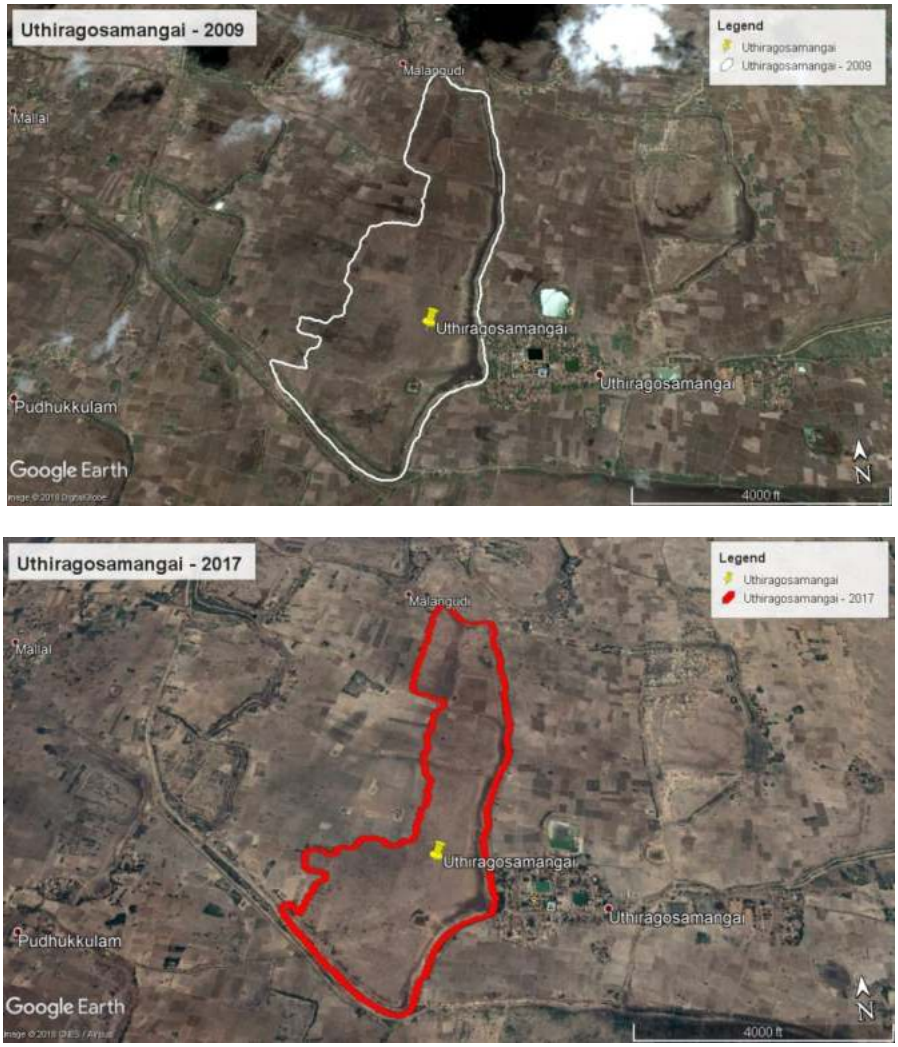
Table 19.14h:List of Birds recorded along the Uthirakosamangai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 3 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 4 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 5 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 6 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 7 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 8 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 9 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 10 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 11 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 12 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 13 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 14 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 15 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 16 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 17 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 18 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 19 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 20 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 21 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

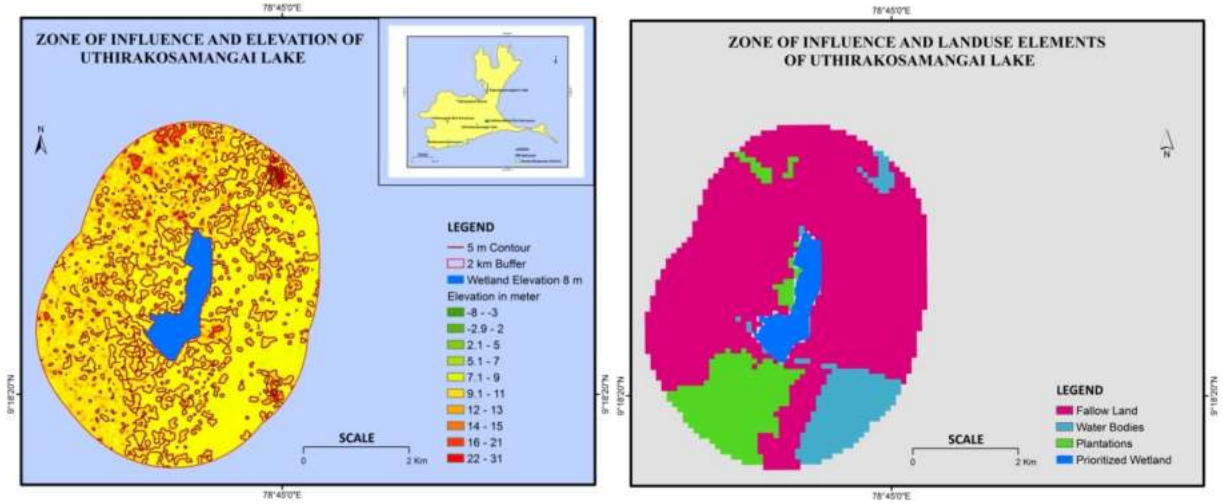
Table 19.14i: List of Mammals recorded along the Uthirakosamangai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |

**Map 19.12: Comparative Google imagery for Uthirakosamangai Lake**




**Map 19.13: The zone of influence around the Uthirakosamangai Lake**



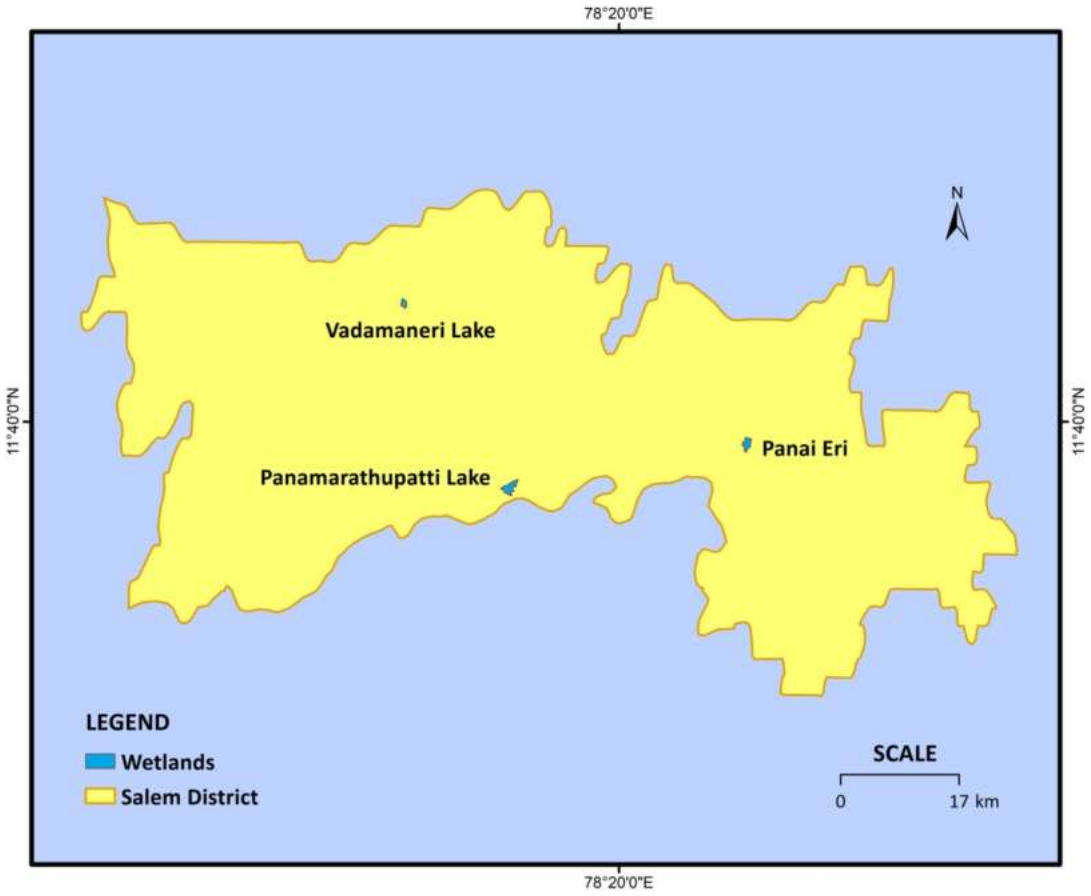
## 20. Salem District

### 1. Introduction

Salem is a Geologist's paradise, surrounded by hills and the landscape dotted with hillocks. Salem has a vibrant culture dating back to the ancient Kongu Nadu. Salem is an important destination for travel and tourism. Salem was the largest district of Tamil Nadu before it was bifurcated into two administrative districts viz. Salem and Dharmapuri districts.

Total geographic area of Salem is 5205 km². Total area under wetland is 15270 ha, which includes 110 small wetland (<2.25 ha). Lakes/Ponds occupies 13.56% of wetland area. The major wetland types are Reservoirs and Tanks/Ponds. There are 204 Tanks/Ponds (2849 ha) and six reservoirs (8687 ha) exist in the district (Map20.1).

The wetlands were selected based on the available literature and the decadal changes on the google maps.




**Map 20.1: Wetlands of Salem District Assessed for Prioritization**

### Observations

Of the three wetlands selected in the district, Panai eri is the largest while Vadamaneri is the smallest of the three wetlands. Around the three wetlands, we recorded 87 plant species both aquatic and terrestrial including 13 invasive species (Table 20.1). The faunal components totaled 140 species with the representation of 42 bird species including the wetland birds. The water was present only in Vadamaneri which was Mesotrophic in status (Table 20.2). The other two wetlands soil have hydric properties.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Panamarathupatti Eri
2. Panai Eri
3. Vadamaneri Lake

Table 20.1: The flora and fauna recorded form the wetlands of Salem District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Vadamaneri Lake | 41(9) | 9 | 10 | 9 | 3 | 13 | 1 | 2 | 26 | 4 |
| 2 | Panai Eri | 30(7) | 3 | 3 | 6 | 1 | 0 | 0 | 1 | 7 | 2 |
| 3 | Panamarathupatti Lake | 55(10) | 19 | 13 | 29 | 2 | 0 | 0 | 4 | 19 | 4 |
| | Total | 87(13) | 25 | 18 | 30 | 3 | 13 | 1 | 4 | 42 | 4 |

Table 20.2: The water and soil quality assessed form the wetlands of Salem District

| District Name | Salem | | |
|---|---|---|---|
| **Wetland Name** | Panai Eri | Panamarathupatti Eri | Vadamaneri Lake |
| **Wetland area (ha)** | 162 | 149 | 75.1 |
| **Buffer Area in Hectare (ha)** | 2394.54 | 2771.46 | 1986.26 |
| **Air Temperature °C** | 32.9 | 31.8 | 32.5 |
| **Water Temperature °C** | | | 28.5 |
| **Humidity %** | 52 | 65 | 47 |
| **Nutrients in Water** | not known | not known | Mesotrophic |
| **Water pH** | | | 8.8 |
| **Water TDS ppm** | | | 247 |
| **Water Conductivity ppm** | | | 363 |
| **Light Penetration cms** | | | 68 |
| **Water Salinity ppt** | | | 0.245 |
| **DO mg/L** | | | 3.46 |
| **PO4P mg/L** | | | 0.011 |
| **Water Na ppm** | | | 42.2 |
| **Water K ppm** | | | 3.8 |
| **Water Li ppm** | | | 0 |
| **Water Ca ppm** | | | 23.9 |
| **Soil Colour code** | 7.5YR 4/4 | 7.5YR 4/3 | 10YR 5/8 |
| **Soil Colour** | Brown | Brown | Yellowish Brown |
| **Soil pH** | 7.81 | 7.81 | 7.38 |
| **Soil TDS ppm** | 179 | 130 | 106 |
| **Soil Conductivity ppm** | 252 | 183.4 | 150.2 |
| **Soil Salinity ppt** | 0.122 | 0.09 | 0.074 |
| **Soil Na ppm** | 11.4 | 9.7 | 16 |
| **Soil K ppm** | 5.3 | 4 | 2 |
| **Soil Li ppm** | 0 | 0 | 0 |
| **Soil Ca ppm** | 22.7 | 12.3 | 7.9 |

**Panai eri**

**Lake Survey Number:** Not Provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Panai eri (Plate46) it is also called as Pethanaickenpalayan eri.

1.2 Villages that surround the wetland include Pethanaickenpalayan, Olapadi, Thennanbadi, Ottathtti, Veenagoundnur, Muthugoundnur.

1.3 & 1.4 The lake is based in Pethanaickenpalayan taluk in Salem district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 37'38.1" N; 11° 38'06.0" N; 11° 38'30.3" N; 11° 38'38.0" N; 11° 38'16.7" N; 11° 38'29.3" N; and Longitude: 078° 29'53.5" E; 078° 30'11.2" E; 078° 30'12.6" E; 078° 30'15.4" E; 078° 30'06.2" E; 078° 30'10.3" E;

1.6 The wetland is not a Protected area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 162 hectares (Map 20.2).

2.2 The Wetland type - the wetlands in belong to the Natural (inland) tank category in the sub category seasonal intermittent tank. (till 10 years ago it was a permanent lake).

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 155 to 169 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area, Vasishata River and Kariyaaoil Dam.

b) The water in the wetland is intermittent in nature for the past 10 years before which it was a permanent lake.

c) The water form the wetland helps in replenishing the groundwater and the overflow joins the Thalavapatti Lake and the agriculture fields.

d) The pH of the water was not recorded as the wetland was completely dry during our visit.

e) The salinity of the lake was recorded as the wetland was completely dry during our visit. But according to the locals it is a fresh water lake.

f) The wetland had *Ipomoea, Parthenium, Prosopis juliflora, Lantna carnea*, grass sp. and other weeds dominated the landscape i.e 70%.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Salem was 0.0 mm.

b) The atmospheric temperature was 32.9 °C and the humidity was 52%

2.7 The area of zone of influence is 2394.54 hectares with a fixed buffer area of 2 kms around the wetland (Map 20.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 15% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2011 and 2018 is given in Map 20.2 & 20.3.

**Section III- Biodiversity**

3.1 List of Plant species: 27 species of plants were recorded around the wetland during our visit (Table 20.3).

3.2 List of animal species: 23 animal species including one domestic species were recorded during the survey (Table 20.4a-f)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 20.4a-f)
3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Prosopis juliflora* and *Ipomoea sp.*formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: invasive species like Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture.
4.2 The overflow water feeds the agricultural lands and Kariyakovil dam.
4.3 Fishery is not undertaken for the past 10 years.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland if and when water is available.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture and fish culture.
4.12 There are no agriculture activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt on a large scale.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture undertaken around the wetland.
5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure, encroachment and garbage dumping.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.
6.4 Increased sand and silt mining is affecting the wetland.

**Section VII Notification Category**

The wetland is not a Protected Areaand is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly due to solid waste dumping and plastic pollution.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The dumping of waste, sewage and effluents within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further. Sand mining if not prohibited should be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for**

Vasen Suli (Aug. 23, 2018), Sankar V (Mar. 11, 2018) ebirdchecklist. (ebird.org/hotspot /L4747493?yr=all&m =& rank=mrec)

Table 20.3:List of Plant species recorded along the Panai Eri

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 3 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 4 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 5 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 6 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 7 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 8 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 9 | *Momordica charantia* | Bitter gourd | Iracavalli, Pakarkaai | Cucurbitaceae | Native | NA |
| 10 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 11 | *Morinda coreia* | Indian Mulberry, | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 12 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 13 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 14 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 15 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 16 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 17 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 18 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 19 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 20 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 21 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 22 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 23 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 24 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 25 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 26 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 27 | *Tragus mongolorum* | Indian Bur Grass | | Poaceae | Native | |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 20.4a:List of Insect recorded along the Panai Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 20.4b:List of Butterflies species recorded along the Panai Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 4 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 6 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 20.4c:List of Odonates species recorded along the Panai Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 20.4a:List of Arachnida species recorded along the Panai Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 20.4d:List of Reptiles species recorded along the Panai Eri

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

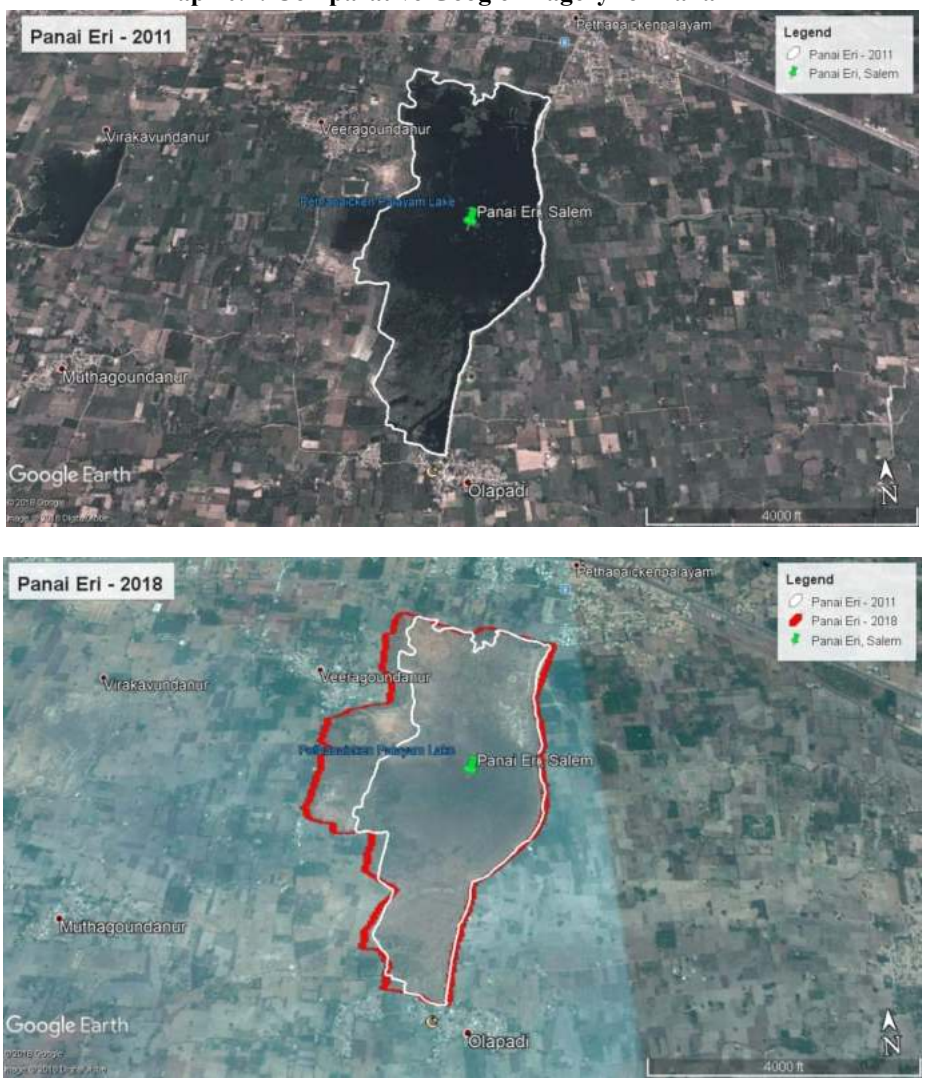
Table 20.4e:List of Bird species recorded along the Panai Eri

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 2 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 3 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 4 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 5 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 6 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 7 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

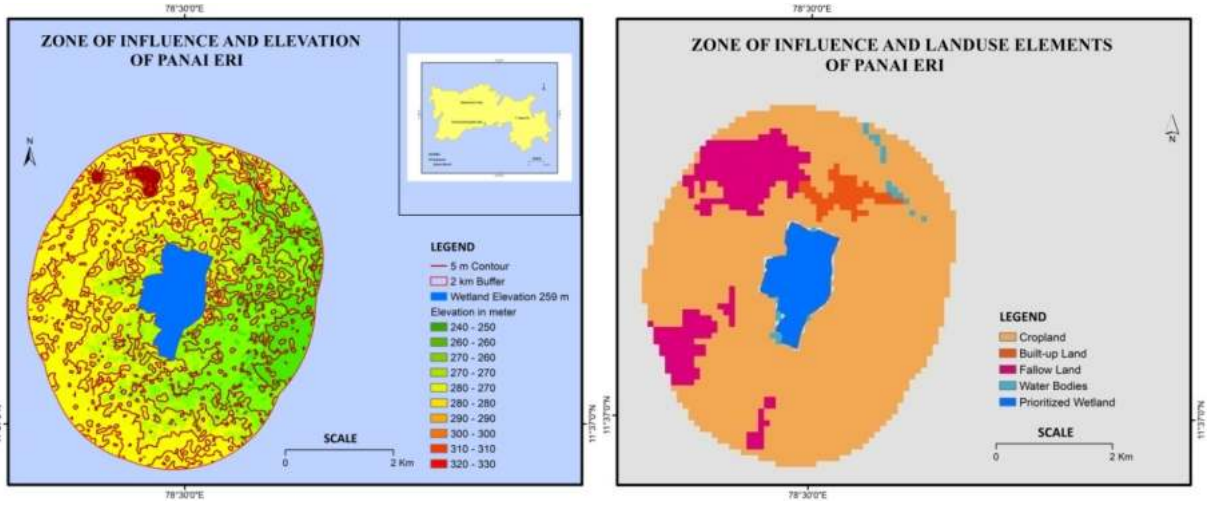
Table 20.4f:List of Mammals recorded along the Panai Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 20.2: Comparative Google imagery for Panai Eri**




**Map 20.3: The zone of influence around the Panai Eri.**



**Panamarathupatti eri**

**Lake Survey Number:** 151

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Panamarathupatti eri (Plate 46) it is also called as Govindapatti.

1.2 Villages that surround the wetland include Kezhaaadikarai, Thippamp.

1.3 & 1.4 The lake is based in Pethanaickenpalayan taluk in Salem district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 34'28.6" N; 11° 34'29.0" N; 11° 34'32.3" N; 11° 34'33.8" N; and Longitude: 078° 11'01.7" E; 078° 11'06.8" E; 078° 11'10.2" E; 078° 11'14.1" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state and the Salem City Corporation.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 149 hectares (Map 20.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank. (till 12 years ago it was a permanent lake).

2.3 Based on the secondary information the average depth is 30 meters for the wetland.

2.4 The elevation of the wetland is 316 to 329 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area, Eracaud hills.

b) The water in the wetland is intermittent in nature for the past 12 years before which it was a permanent lake.

c) The water form the wetland helps in replenishing the groundwater and the overflow joins the Mallureri and the agriculture fields and finally joins the Cauvery.

d) The pH of the water was not recorded as the wetland was completely dry during our visit.

e) The salinity of the lake was recorded as the wetland was completely dry during our visit. But according to the locals it is a fresh water lake.

f) The wetland had *Ipomoea, Parthenium, Prosopis juliflora, Lantna carnea*, grass sp. and other weeds that dominated the landscape i.e 70%.

2.6 Climatic setting

a) Rainfall for the month of February, 2018 in Salem was 0.0 mm.

b) The atmospheric temperature was 31.8 °C and the humidity was 65%

2.7 The area of zone of influence is 2771.46 hectares with a fixed buffer area of 2 kms around the wetland (Map 20.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 40%; | Grasslands/scrublands 0%; |
| Agricultural lands 40%; | Settlements (rural) 20% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 20.4 & 20.5.

**Section III- Biodiversity**

3.1 List of Plant species: 50 species of plants were recorded around the wetland during our visit (Table 20.5).

3.2 List of animal species: 90 animal species including 3 domestic species were recorded during the survey (Table 20.6a-g)

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 20.6a-g)

3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Prosopis juliflora*, *Parthenium histrophorus* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture.

4.2 The overflow water feeds the agricultural lands and Mallur eri.

4.3 Fishery is not undertaken for the past 12 years.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.

4.7 The wetland has open dug wells that are used for providing drinking water for the sug=rrounding villages. The well is dug up to almost 100 feet.

4.8 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.9 It is a major source of ground water recharge.

4.10 There is significant runoff form the surrounding area.

4.11 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland if and when water is available.

4.12 The site adjoining the wetland is majorly used by the locals for agriculture and fish culture.

4.13 There are no agriculture activities within the wetland.

4.14 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.15 The wetland does support local fish species.

4.16 There is mining for sand or silt on a small scale.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is agriculture undertaken around the wetland.

5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure, encroachment and garbage dumping.

6.3 The ecological character is changing rapidly due to lack of conservation measures.

6.4 Increased sand and silt mining is affecting the wetland.

**Section VII Notification Category**

The wetland is not a Protected Areaand is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

No such issues were recorded.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The wetland is a highly potential area that can be prone to land use change that can in the absence of water become a detrimental aspect in conservation.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Panamarathupatti Lake

Sathya J. (2007) Economics of pollution control in Sago industry in Salem District Tamil Nadu. Bharathidasan University, TIruchirappalli.Ph. D Thesis.

Staff Reporter (Mar. 22, 2012) Plan to make Panamarathupatti Lake a tourist attraction. (thehindu.com/todays-paper/tp-national/tp-tamilnadu/plan-to-make-panamarathupatti-lake-a-tourist-attraction/article3120909.ece)

Ilangovan R. (Sep. 20, 2010) Panamarathupatti Lake likely to be made a tourist attraction. (thehindu.com/todays-paper/tp-national/tp-tamilnadu/Panamarathupatti-Lake-likely-to-be-made-a-tourist-attraction/article15999823.ece)

Table 20.5: List of Plant species recorded along the Panamarathupatti Eri

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 2 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Lannea coromandelica* | Indian Ash Tree | Oti | Anacardiaceae | Native | NA |
| 10 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 11 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 12 | *Senna tora* | Stinking Cassia, Peanut weed, Sickle senna, | Senavu | Fabaceae | Native | NA |
| 13 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 14 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 16 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 17 | *Oldenlandia umbellata* | Chay Root, Indian madder, Choy root | Chayam, Chayaver, Emboorel, Imbura-ver | Rubiaceae | Native | |
| 18 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 19 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 20 | *Catharanthus roseus* | Periwinkle, Madagascar periwinkle, Rosy periwinkle, Vinca | | Apocynaceae | Introduced | NA |
| 21 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 22 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 23 | *Evolvulus alsinoides* | Dwarf morning glory,Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 24 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 25 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 26 | *Ipomoea sagittifolia* | Purple Heart Glory | Mancikai, Manjikam, Naruntali | Convolvulaceae | Native | NA |
| 27 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 28 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 29 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 30 | *Mesosphaerum suaveolens* | American mint, Bush mint, Chan, Horehound, Pignut, Stinking roger, Wild spikenard | | Lamiaceae | Naturalized | NA |
| 31 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 32 | *Boerhavia repens* | Erect Spiderling | | Nyctaginaceae | Invasive | NA |
| 33 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 34 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 35 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 36 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 37 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 38 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 39 | *Euphorbia antiquorum* | Triangular Spurge, Square Spurge, Square milk hedge, Fleshy spurge | Chaturakalli, Kalli, Kantiravam, Tiruvargalli | Euphorbiaceae | Native | |
| 40 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 41 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 42 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 43 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 44 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 45 | *Cyperus dubius* | White Water Sedge | Veluttha nirbasi | Cyperaceae | Native | LC |
| 46 | *Bambusa bambos* | Indian Thorny Bamboo | kulay-munkil, peru-munkil | Poaceae | Native | NA |
| 47 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 48 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 49 | *Oropetium thomaeum* | --- | Kuravan Thoadu Pullu | Poaceae | Native | NA |
| 50 | *Perotis indica* | *Indian comet grass* | Narival,Kudiraival pullu,thopparai pullu | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 20.6a: List of Insect species recorded along the Panamarathupatti Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Hooded Grasshopper | *Teratodes monticollis* | Acrididae |
| 2 | Grasshopper 1 | *Diabolocatantops pinguis* | Acrididae |
| 3 | Grasshopper 3 | *Chrotogonus trachypterus* | Pyrgomorphidae |
| 4 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Transverse lady beetle | *Coccinella transversalis* | Coccinellidae |
| 7 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 8 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 9 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 10 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 11 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 12 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 13 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |
| 14 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 15 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 16 | Pharaoh Ant | *Monomorium pharaonis* | Formicidae |
| 17 | Orange Spider Wasp | *Cryptocheilus bicolor* | Pompilidae |
| 18 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |
| 19 | Indian Robber fly | *Asilidae sp.* | Asilidae |

Table 20.6b: List of Butterfly and moth species recorded along the Panamarathupatti Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | African Marbled Skipper | *Gomalia elma* | Pyrginae | Uncommon |
| 2 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 5 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |

| | | | | |
|---|---|---|---|---|
| 6 | Paris Peacock | *Papilio paris tamilana* | Papilioninae | Uncommon |
| 7 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 8 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 9 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 10 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 11 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 12 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 13 | Indian Cabbage White | *Pieris canidia* | Pierinae | Common |
| 14 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 15 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 16 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 17 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 18 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 19 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 20 | Common Nawab | *Polyura athamas* | Danainae | Common |
| 21 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 22 | Common Leopard | *Phalanta phalantha* | Heliconiinae | Common |
| 23 | Common Sailer | *Neptis hylas* | Limenitinae | Common |
| 24 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 25 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 26 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 27 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 28 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |
| 29 | Crimson-Banded Handmaiden | *Amata passalis* | Erebidae | Common |

Table 20.6c: List of Odonata species recorded along the Panamarathupatti Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Emerald Spreadwing | *Lestes elatus* | Lestidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Yellow-Tailed Ashy Skimmer | *Potamarcha congener* | Libellulidae | Common |
| 9 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 10 | Coral-Tailed Cloud Wing | *Tholymis tillarga* | Libellulidae | Common |
| 11 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |
| 12 | Black Marsh Trotter | *Tramea limbata* | Libellulidae | Common |
| 13 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 20.6d: List of Arachnida species recorded along the Panamarathupatti Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Millipede | *Spinotarsus colosseus* | Odonotopgidae |
| 2 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 20.6e: List of Reptile species recorded along the Panamarathupatti Eri

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Peninsular Rock Agama | *Psammophilus dorsalis* | Agamidae | Least Concern |
| 2 | Fan-throated Lizard | *Sitana ponticeriana* | Agamidae | Least Concern |
| 3 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 4 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 20.6f: List of Bird species recorded along the Panamarathupatti lake

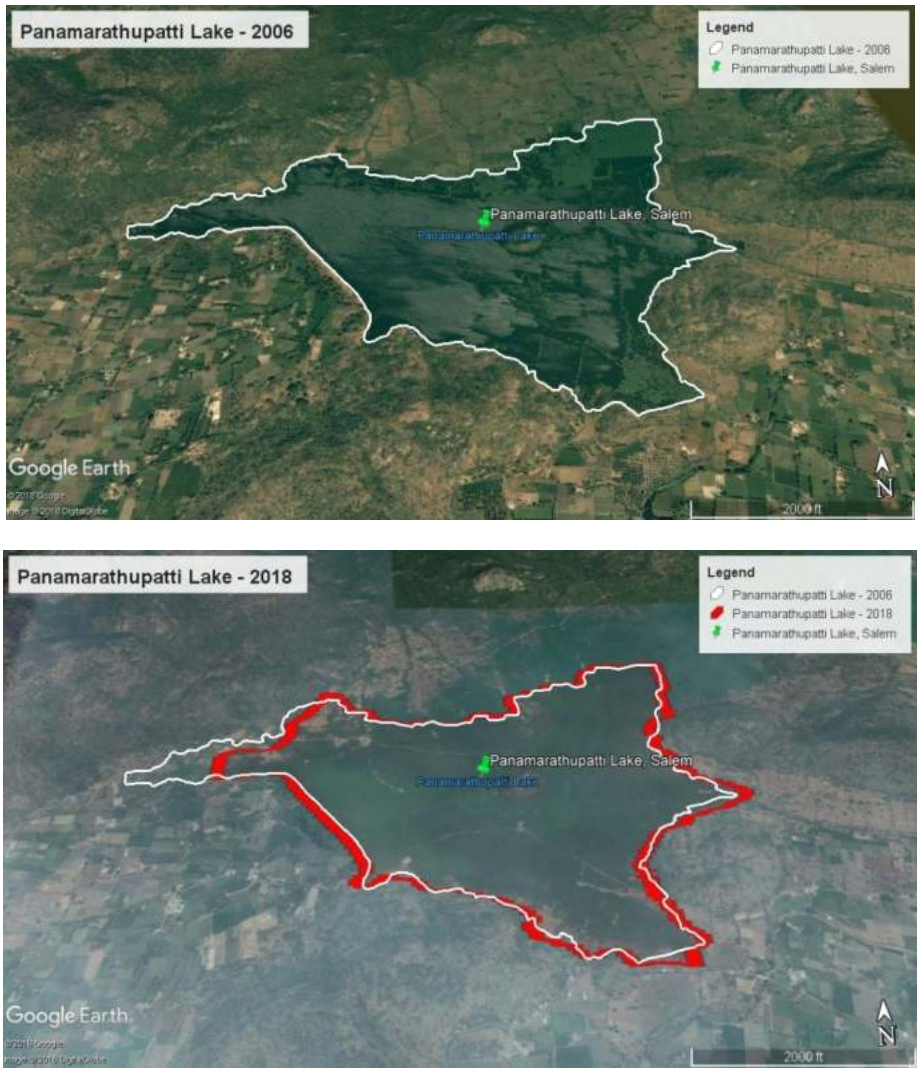
| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Common Kestrel | *Falco tinnunculus* | Accipitridae | Least Concern |
| 3 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 4 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 5 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 6 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 7 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 8 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 9 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 10 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 11 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 12 | White-browed Bulbul | *Pycnonotus luteolus* | Pycnonotidae | Least Concern |
| 13 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 14 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 15 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 16 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 17 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 18 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 19 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

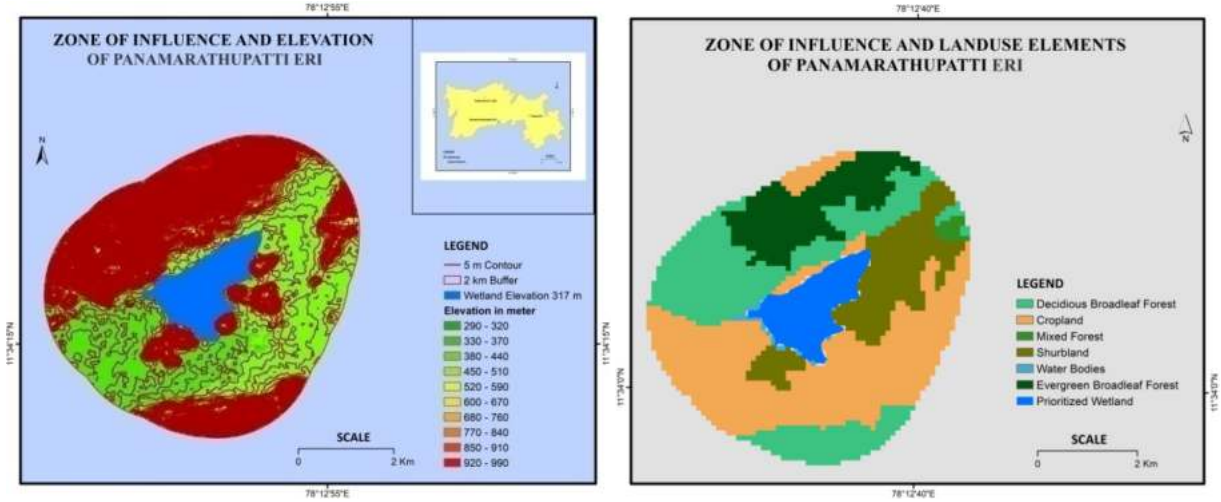
Table 20.6g: List of Mammal species recorded along the Panamarathupatti Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 20.4: Comparative Google imagery for Panamarathupatti Eri**




**Map 20.5: The zone of influence around the Panamarathupatti Eri**



**Vadamneri Lake**

**Lake Survey Number:** Not Provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Vadamneri lake (Plate 47).

1.2 Villages that surround the wetland include Dharapuram, Vadamneri Vaiyakadu, Kallarakadu, Oattamedu, Sengamaniyar kottai, Nallkannan kottai, Palpadiyan kottai, Neermarai koil, School guard, Saikottai.

1.3 & 1.4 The lake is based in Dharmapuri district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 49'44.0" N; 11° 49'13.5" N; 11° 49'04.4" N; 11° 48'55.3" N; 11° 48'48.9" N; 11°48'59.9" N; and Longitude: 078°03'32.5" E; 078°03'32.9" E; 078°03'32.1" E; 078°03'31.2" E; 078° 03'22.9" E; 078° 03'10.1" E;

1.6 The wetland is not a Protected area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 75.1 hectares (Map 20.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 4.5 meters for the wetland.

2.4 The elevation of the wetland is 311 to 374 meters (asl)..

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area, Servarayan hills and sewage.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow joins the Sarabanga River canal and the agriculture fields.
d) The pH of the water was form 8.7 to 8.8.
e) The salinity of the lake was 0.245ppt.
f) The wetland had *Ipomoea, Prosopis juliflora, Lantna carnea*, grass sp. and other weeds that dominated the landscape i.e 30%.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Dharmapuri was 0.0 mm.
b) The atmospheric temperature was form 31.3 to 32.5°C and the humidity was form 42 to 43 %

2.7 The area of zone of influence is 1986.26 hectares with a fixed buffer area of 2 kms around the wetland (Map 20.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 80%; | Settlements (rural) 10% |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2017 is given in Map 20.6 & 20.7.

**Section III- Biodiversity**

3.1 List of Plant species: 40 species of plants were recorded around the wetland during our visit (Table 20.7).

3.2 List of animal species: 77 animal species including 3 domestic species were recorded during the survey (Table 20.8a-i).

3.3 Species of Conservation importance: Threatened species of birds were not observed but two species of threatened fish were reported during the survey (Table 20.8a-i).

3.4 Major Plant invasive alien species and extent of invasion – Nine invasive plants including *Prosopis juliflora*, *Lantana camara* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion - invasive species Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture.

4.2 The overflow water feeds the agricultural lands and Sarabanga River channel.

4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The commercial fishery is under the contract of the PWD, who introduces the fish seeds.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose. The borassus plant sap is also collected for local consumption and sale in the local market.

4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding area.

4.10 The wetland has major temples along its vicinity and major cultural and religious activities are performed in the wetland.

4.11 The site adjoining the wetland is majorly used by the locals for agriculture and fish culture.

4.12 There are agriculture activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland does support local fish species.

4.15 There is mining for sand or silt not undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 The locals are aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure, encroachment and garbage dumping.

6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Areaand is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly due to solid waste dumping and plastic pollution.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The dumping of waste, sewage and effluents within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Vadamaneri Lake**

No published literature is available for Vadamaneri Lake

Table 20.7. List of Plant species recorded along the Vadamaneri Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Malvastrum coromandelianum subsp. cor omandelianum* | False mallow, Broom weed, Clock plant, | | Malvaceae | Native | NA |
| 3 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 4 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 5 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 6 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 7 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 8 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 12 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 13 | *Emilia sonchifolia* | Purple Sow Thistle | Muyalchevi | Asteraceae | Native | NA |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 16 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 17 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 18 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 19 | *Utricularia aurea* | Golden Bladderwort | | Lentibulariaceae | Native | LC |
| 20 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 21 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 22 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 23 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 24 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 25 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 26 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 27 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 28 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 29 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 30 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 31 | *Euphorbia antiquorum* | Triangular Spurge, Square Spurge, Square milk hedge, | Chaturakalli, Kalli, Kodiravam, Tiruvargalli | Euphorbiaceae | Native | |
| 32 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 33 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 34 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 35 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 36 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 37 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 38 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 39 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |
| 40 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 20.8a: List of Insects recorded along the Vadamaneri Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Grasshopper species | *Chrotogonus trachypterus* | Pyrgomorphidae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 5 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 6 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |
| 9 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 20.8b: List of Butterflies recorded along the Vadamaneri Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 4 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 6 | Common Crow | *Euploea core* | Danaidae | Common |
| 7 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 8 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 9 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 20.8c: List of Dragonflies recorded along the Vadamaneri Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 5 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 8 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 9 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 10 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 20.8d: List of Arachnida recorded along the Vadamaneri Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |
| 3 | Long Jawed Orb-weaver | *Tetragnatha sp.* | Tetragnathidae |

Table 20.8e: List of Fish recorded form the Vadamaneri Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Anabas testudineus* | Climbing erch | Panangottai meen, | Anabantidae | DD |
| 12 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |
| 13 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 20.8f: List of Amphibians recorded form the Vadamaneri Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

Table 20.8g: List of Reptiles recorded along the Vadamaneri Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 20.8h: List of Birds recorded along the Vadamaneri Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 10 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 11 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 12 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 13 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 14 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 15 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 16 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 17 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 18 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 19 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 20 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 21 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 22 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 23 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 24 | Yellow Wagtail | *Motacilla flava* | Motacillidae | Least Concern |
| 25 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 26 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

Table 20.8i: List of Mammals recorded along the Vadamaneri Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

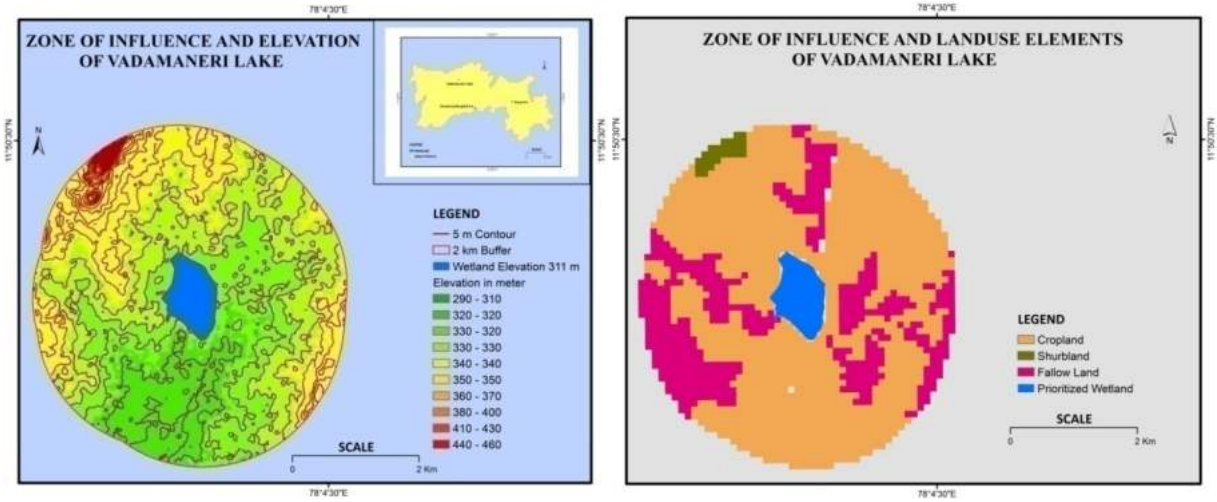
**Map 20.6: Comparative Google imagery for Vadamaneri Lake**







**Map 20.7: The zone of influence around the Vadamaneri Lake.**



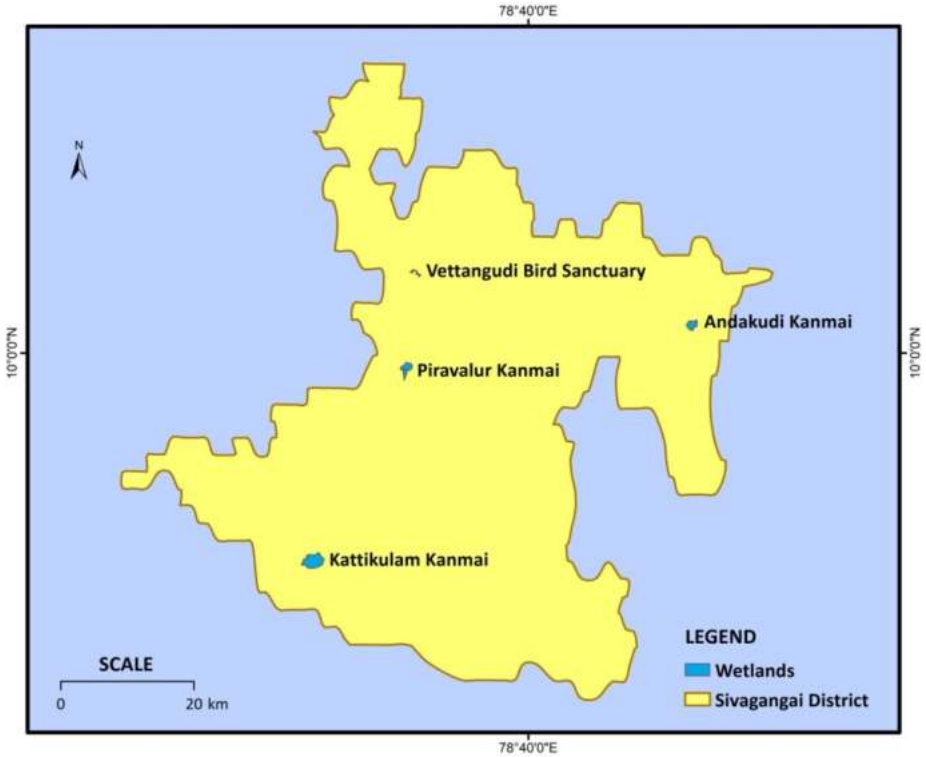
## 21. Sivagangai District

### 1. Introduction

Sivagangai kingdom was founded by Sasivarna Periya Oodaya Thevar in 1730. The town was subsequently ruled by his successors and ultimately by Velu Nachiyar under the stewardship of Maruthu Pandiyar. Sivaganga with a geographical area of 4189 km$^2$ is bounded by Pudukkottai district on the Northeast, Tiruchirapalli district on the North, Ramanathapuram district on South East, Virudhunagar district on South West and Madurai District on the West. Shivaganga is known for agriculture, metal working and weaving. The region around Sivaganga has considerable mineral deposits. Sivagangai has an average elevation of 102 metres (334 feet).The city has a tropical wet and dry climate. The town gets major rainfall during the North East monsoon period. The Annual normal rainfall varies form 336.2 mm. The average Rainfall being received in the town is 931 mm.

Total area under wetland is 67172 ha, which includes 1474 small wetland (<2.25 ha). Lakes/Ponds occupies 53.25 % of wetland area. The second major wetland type is Tanks/Ponds. There are 2230 Tanks/Ponds with 24972 ha area (37.18%).

SACON during 2004 had prioritized one wetland i.e. Vettangudi Bird Sanctuary form Sivaganga district for conservation based on avian diversity and the ecosystem services provided by the wetlands. A second wetland i.e. Piravalur kanmai was identified form the satellite imageries based on the size of the wetland. To prepare the brief document we selected these two wetlands to assess its present potential for conservation. (Map 21.1). The other two wetlands were selected based on decadal changes in the goggle imagery.




**Map 21.1: Wetlands of Shivagangai district assessed for Prioritization**

### Observations

Of the four wetlands selected in the district, Kattikulam Kanmai is the largest while Vettangudi Bird Sanctuary is the smallest wetland. Around the four wetlands, we recorded 95 plant species both aquatic and terrestrial including

15 invasive species (Table 21.1). The faunal components totaled 130 species with the representation of 56 bird species including the wetland birds. The field study revealed that Andakudi Kanmai was Oligotrophic the other three wetlands were Mesotrophic in status, although Piravallur kanmai was dry and hydric (Table 21.2).

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Vettangudi Bird Sanctuary wetland. Mining of lake sediments was a major threat to all the three wetlands other than the sanctuary in addition to the release of sewage that influences the character of the wetland. The sanctuary was mostly influenced by the agricultural fields.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Piravalur Kanmai
2. Kattikulam Kanmai
3. Andakudi Kanmai
4. Vettangudi Bird Sanctuary

Table 21.1: The flora and fauna recorded form the wetlands of Sivagangai District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Vettangudi Bird Sanctuary | 56(13) | 9 | 7 | 25 | 1 | 6 | 0 | 1 | 42 | 4 |
| 2 | Piravalur Kanmai | 25( 7) | 2 | 3 | 8 | 0 | 0 | 0 | | 10 | 4 |
| 3 | Kattikulam Kanmai | 34(5) | 6 | 6 | 9 | 1 | 6 | 0 | 1 | 17 | 3 |
| 4 | Andakudi Kanmai | 21(2) | 3 | 4 | 7 | 0 | 5 | 0 | 1 | 20 | 5 |
| | Total | 95(15) | 16 | 12 | 28 | 1 | 11 | 0 | 1 | 56 | 5 |

Table 21.2: The water and soil quality assessed form the wetlands of Sivagangai District

| District Name | Sivagangai | | | |
|---|---|---|---|---|
| Wetland Name | Vettangudi Bird Sanctuary | Piravalur Kanmai | Kattikulam Kanmai | Andakudi Kanmai |
| Wetland area (ha) | 12.5 | 211 | 537 | 172 |
| Buffer Area in Hectare (ha) | 2077.7 | 2701.46 | 3129.63 | 2327.51 |
| Air Temperature °C | 29.1 | 30 | 36 | 35.5 |
| Water Temperature °C | 27.1 | | 29 | 31.7 |
| Humidity % | 58 | 60 | 65 | 10 |
| Nutrients in Water | Mesotrophic | Mesotrophic | Mesotrophic | Oligotrophic |
| Water pH | 8 | | 8.2 | 7.08 |
| Water TDS ppm | 612 | | 355 | 60.6 |
| Water Conductivity ppm | 439 | | 387 | 86.6 |
| Light Penetration cms | 17.2 | | 25 | 7 |
| Water Salinity ppt | 0.532 | | 0.141 | 0.096 |
| DO mg/L | 8.74 | | 11.59 | 5.08 |
| PO4P mg/L | 0.004 | | 0.135 | 0.013 |
| Water Na ppm | 118.5 | | 1448 | 1732 |
| Water K ppm | 13.4 | | 4.9 | 4 |
| Water Li ppm | 0 | | 0.5 | 0.5 |
| Water Ca ppm | 25.5 | | 103.2 | 106.3 |
| Soil Colour code | 10YR 6/8 | 2.5Y 5/6 | 5YR 5/4 | 5YR 5/6 |
| Soil Colour | Brownish Yellow | Light Olive Brown | Reddish Brown | Yellowish Red |
| Soil pH | 7.07 | 8.06 | 7.45 | 6.88 |
| Soil TDS ppm | 144 | 379 | 161 | 30.5 |
| Soil Conductivity ppm | 202 | 536 | 227 | 43 |
| Soil Salinity ppt | 0.097 | 0.258 | 0.111 | 0.027 |
| Soil Na ppm | 27.9 | 108.3 | 14.8 | 3.1 |
| Soil K ppm | 4 | 3 | 3.1 | 1.2 |
| Soil Li ppm | 0 | 0.1 | 0 | 0 |
| Soil Ca ppm | 10.1 | 22.7 | 8 | 1.3 |

**Andakudi Kanmai**

**Lake Survey Number**: 118

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Andakudikanmai (Plate 48).

1.2 Villages that surround the wetland include Vadakkukudiruppu, Thekkukudiruppu, Nadukudiruppu, Andakupi.

1.3 & 1.4 The lake is based in Karaikudi taluka in Sivagangai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 02'16.5" N; 10° 02'11.7" N; 10° 02'07.4" N; 10° 02'07.6" N; and Longitude: 078° 53'41.4" E; 078° 53'40.1" E; 078° 53'36.5" E; 078° 53'34.8" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Sivagangai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 172 hectares (Map 21.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 1 to 2.5 meters for the wetland.

2.4 The elevation of the wetland is 47 to 51 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of intermittent nature with regular occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters. The water during the rains last for just up to two months
c) The water also helps in replenishing the groundwater.
d) The pH of the water was 7.08.
e) The lake has fresh water as the salinity was 0.096 ppt.
f) The wetland has excess of *Prosopis* vegetation and other weeds invaded into the wetland.

2.6 Climatic setting

a) Rainfall for the month of January in Sivagangai was 4.1 mm.
b) The Atmospheric temperature was 35.5 °C and the humidity was 40%

2.7 The area of zone of influence is 2327.51 hectares with a fixed buffer area of 2 kms around the wetland (Map 21.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 0%; |
| Agriculture 90%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0%. |

2.9 The comparison of the wetland for the years 2003 and 2018 is given in Map 21.2 & 21.3.

**Section III- Biodiversity**

3.1 List of Plant species: 21 species of plants were recorded around the wetland during our visit (Table 21.3).

3.2 List of animal species: 45 animal species including 4 domestic species were recorded during the survey (Table 21.4a-g).

3.3 Species of Conservation importance: One near Threatened specie of birds were observed during the survey (Table 21.4a-g).

3.4 Major Plant invasive alien species and extent of invasion: The invasive plants including *Parthenium hysterophorus* and *Prosopis juliflora* formed nearly 75 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: The region was totally water scarse due to very poor rainfall and hence there was no invasive fauna recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for drinking purpose when the wetland is full capacity as it is rainfall dependent.
4.2 Agriculture is undertaken around the wetland and the ground water is used for irrigation.
4.3 There is no Fishery undertaken for personal or recreational use and not on a commercial scale.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is totally neglected and not paid much attention mainly due to lack of rain.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland has three temples along its bank and major cultural and religious activities are performed in the wetland
4.10 There are no agriculture or plantation activities within the wetland.
4.11 The wetland provides a suitable habitat for birds as we also recorded the terrestrial and wetland bird species during our survey.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is agriculture undertaken around the wetland.
5.3 Grazing by the cattle is undertaken.
5.4 The wetland water is still consumed by the locals.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow as it is dependent on rainfall only.
6.2 There are invasive plant species that is changing the habitat of the wetland.
6.3 Scarcity of water can change the land use pattern of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The major problem of the wetland is less amount of water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

No such activities seen but the land use change should be monitored.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for the wetland.

Table 21.3: List of Plants species recorded along the Andakudi Kanmai

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 4 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 5 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 6 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 7 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 8 | *Oldenlandia corymbosa* | Diamond flower,Corymbose hedyotis,flat top mile granies,Wild chayroot | Kattucayaver,Pappan puntu,parppatakam | Rubiaceae | Native | NA |
| 9 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 10 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 11 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 12 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 13 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 14 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 15 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 16 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 17 | *Cyanotis arachnoidea* | Grass of the Dew | Vallukkai | Commelinaceae | Native | NA |
| 18 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kotti kizhangu | Aponogetonaceae | Native | LC |
| 19 | *Bambusa bambos* | Indian Thorny Bamboo | kulay-munkil, peru-munkil | Poaceae | Native | NA |
| 20 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 21 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 21.4a: List of Insects recorded along the Andakudi Kanmai

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Mantis Egg (*Ootheca*) | | Mantodae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 21.4b: List of Butterflies recorded along the Andakudi Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 5 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Tawny Coster | *Acraea violae* | Acraeinae | Common |

Table 21.4c: List of Odonates recorded along the Andakudi Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |

Table 21.4d: List of Fishes recorded form the Andakudi Kanmai

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 3 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 4 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 5 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 21.4e: List of Reptiles recorded along the Andakudi Kanmai

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

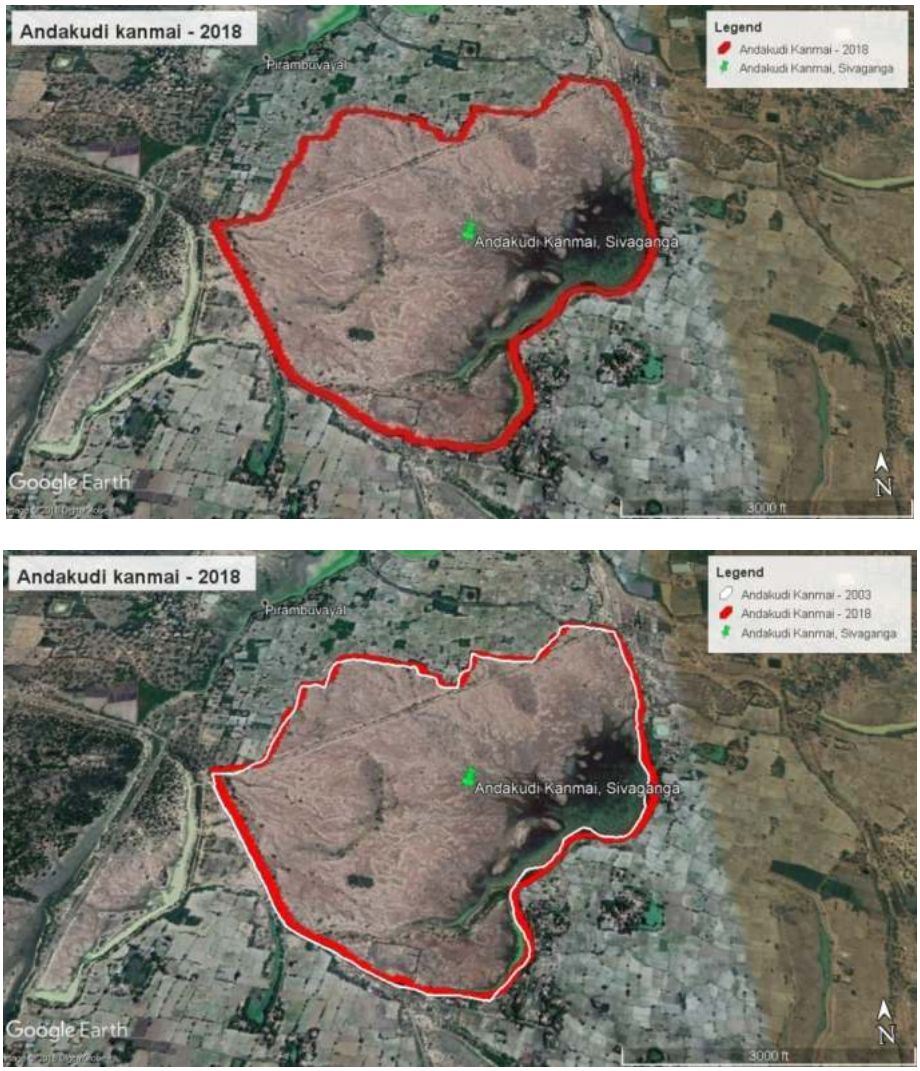
Table 21.4f: List of Birds recorded along the Andakudi Kanmai

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Red-naped Ibis | *Pseudibis papillosa* | Threskiornithidae | Least Concern |
| 4 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 5 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 6 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 7 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 8 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 9 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 10 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 11 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 12 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 13 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 14 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 15 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 16 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 17 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 18 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 19 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 20 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

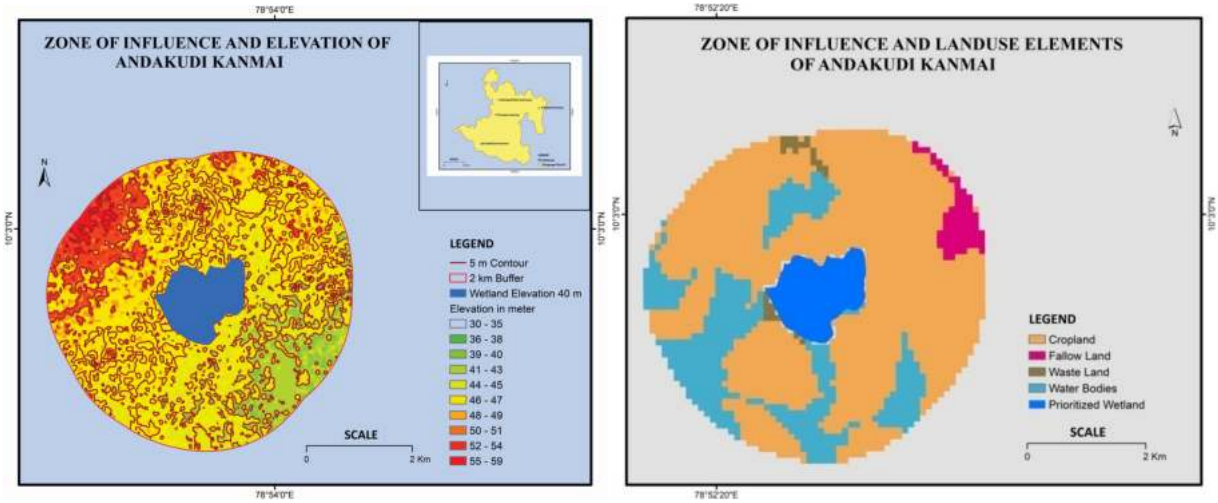
Table 21.4g: List of Mammals recorded along the Andakudi Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 21.2: Comparative Google images for Andakudi Kanmai**




**Map 21.3: Zone of influence around the Andakudi Kanmai**



**Kattikulam Kanmai**

**Lake Survey number**: 228 to 279

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kattikulam kanmai (Plate 48).

1.2 Villages that surround the wetland include Kattikulam, Mettumadai, Perumechari, Kumbhakaranendra.

1.3 & 1.4 The lake is based in Manamadurai taluka in Sivagangai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 42'51.3" N; 09° 42'55.4" N; 09° 42'56.7" N; 09° 42'34.6" N; 09° 43'31.9" N; and Longitude: 078° 23'18.6" E; 078° 23'18.5" E; 078° 23'17.7" E; 078° 22'41.5" E; 078° 23'28.6" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Sivagangai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 537 hectares (Map 21.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 1 to 2.5 meters for the wetland.

2.4 The elevation of the wetland is 81 to 89 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and the Vaigai River.
b) The water in the wetland is mostly of intermittent nature with regular occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters. The water during the rains last for just up to two months.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was 8.3.
e) The lake has fresh water as the salinity was 0.141 ppt.
f) The wetland has excess of prosopis vegetation and other weeds invaded into the wetland.

2.6 Climatic setting

a) Rainfall for the month of January in Sivagangai was 4.1 mm.
b) The Atmospheric temperature was 36.5 °C and the humidity was 43%

2.7 The area of zone of influence is 3129.63 hectares with a fixed buffer area of 2 kms around the wetland (Map 21.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 0%; |
| Agriculture 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0%; |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 21.4 & 21.5.

**Section III- Biodiversity**

3.1 List of Plant species: 31 species of plants were recorded around the wetland during our visit (Table 21.5).

3.2 List of animal species: 49 animal species including 2 domestic species were recorded during the survey (Table 21.6a-h).

3.3 Species of Conservation importance: No Threatened specie of birds observed during the survey (Table 21.6a-h).

3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* formed nearly 75 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: The region was totally water scarse due to very poor rainfall and hence there was no invasive fauna recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as it is rainfall dependent.
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 There is no Fishery undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is totally neglected and not paid much attention mainly due to lack of rain.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland has only one temple along its bank.
4.10 There are agriculture or plantation activities within the wetland.
4.11 The wetland provides a suitable habitat for birds as we also recorded the local and bird species during our survey.
4.12 There are high tension wires passing through the wetland.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is no withdrawal of water for agriculture as the agriculture is practiced within the wetland.
5.6 The region is completely water scarse.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow as it is dependent on rainfall only.
6.2 There are invasive plant species that is changing the habitat of the wetland.
6.3 Scarcity of water can change the land use pattern of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland. However the major problem of the wetland is less amount of water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

No such activities seen but the land use change should be monitored.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Kattikulam Lake.

Table 21.5: List of plant species recorded along the Kattikulam Kanmai

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 5 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 6 | *Abrus precatorius* | Crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 7 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 8 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 11 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 12 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 13 | *Spermacoce pusilla* | Tiny False Buttonweed, Erect False Button weed | | Rubiaceae | Native | NA |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Marsdenia volubilis* | Sneeze Wort, Cotton milk plant | Kotippalai | Apocynaceae | Native | NA |
| 16 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 17 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 18 | *Solanum nigrum* | Black nightshade,Blackberry nightshade,Nightshade,Poison berry | Manathakkali | Solanaceae | Native | NA |
| 19 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 20 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 21 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, Pulinagam | Martyniaceae | Native | NA |
| 22 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 23 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 24 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 25 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 26 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 27 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 28 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 29 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 30 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 31 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 21.6a: List of Insect species recorded along the Kattikulam Kanmai

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Grasshopper species | *Diabolocatantops pinguis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Short horned Grasshopper | *Acrida exaltata* | Acrididae |
| 4 | Colour Grasshopper | *Neorthacris acuticeps* | Pyrgomorphidae |
| 5 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 21.6b: List of Butterfly species recorded along the Kattikulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |

| | | | | |
|---|---|---|---|---|
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 6 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 7 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 8 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 9 | Yellow Pansy | *Junonia hierta* | Nymphalinae | Common |

Table 21.6c: List of Odonata species recorded along the Kattikulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Yellow-Tailed Ashy Skimmer | *Potamarcha congener* | Libellulidae | Common |

Table 21.6d: List of Arachnida species recorded along the Kattikulam Kanmai

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 21.6e: List of fish species recorded form the Kattikulam Kanmai

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 4 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 5 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 6 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 21.6f: List of Reptile species recorded along the Kattikulam Kanmai

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

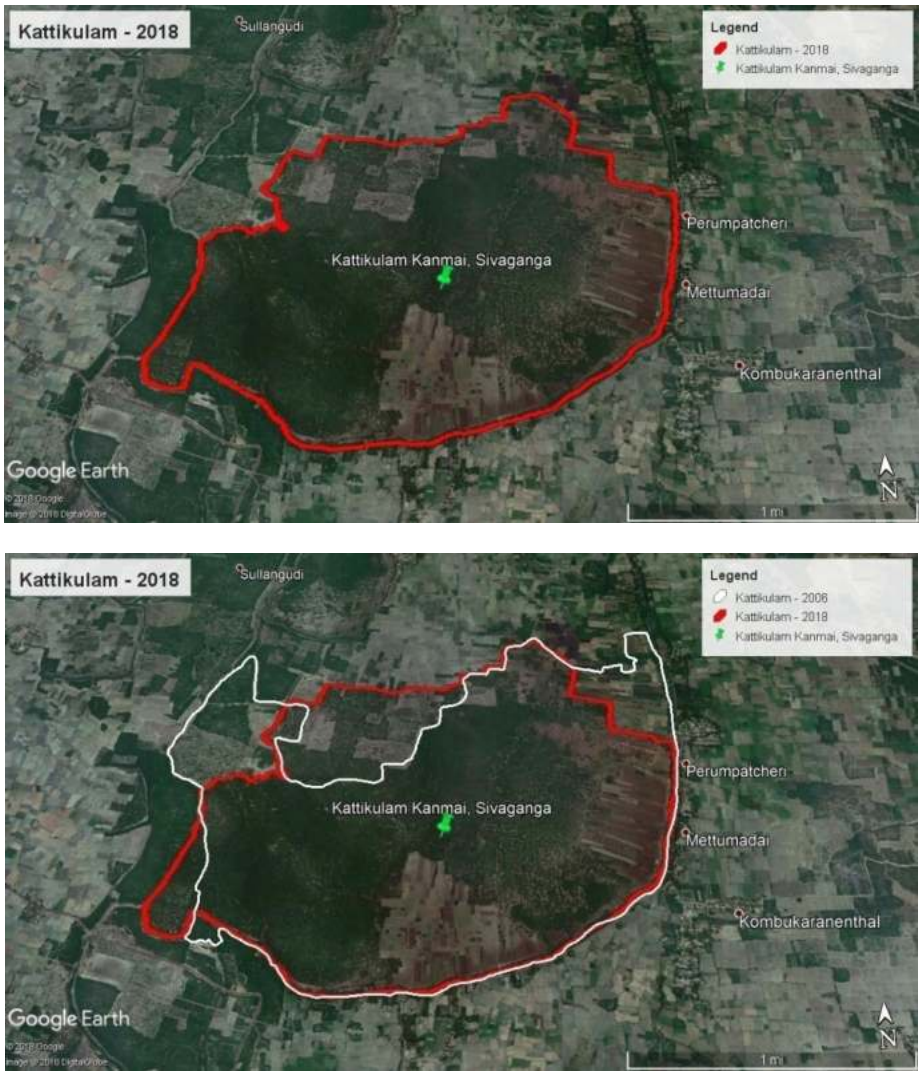
Table 21.6g: List of Birds species recorded along the Kattikulam Kanmai

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 6 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 7 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 8 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 9 | Blue-faced Malkoha | *Rhopodytes viridirostris* | Cuculidae | Least Concern |
| 10 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 11 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 14 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 15 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 16 | Oriental Magpie Robin | *Copsychus saularis* | Muscicapidae | Least Concern |
| 17 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

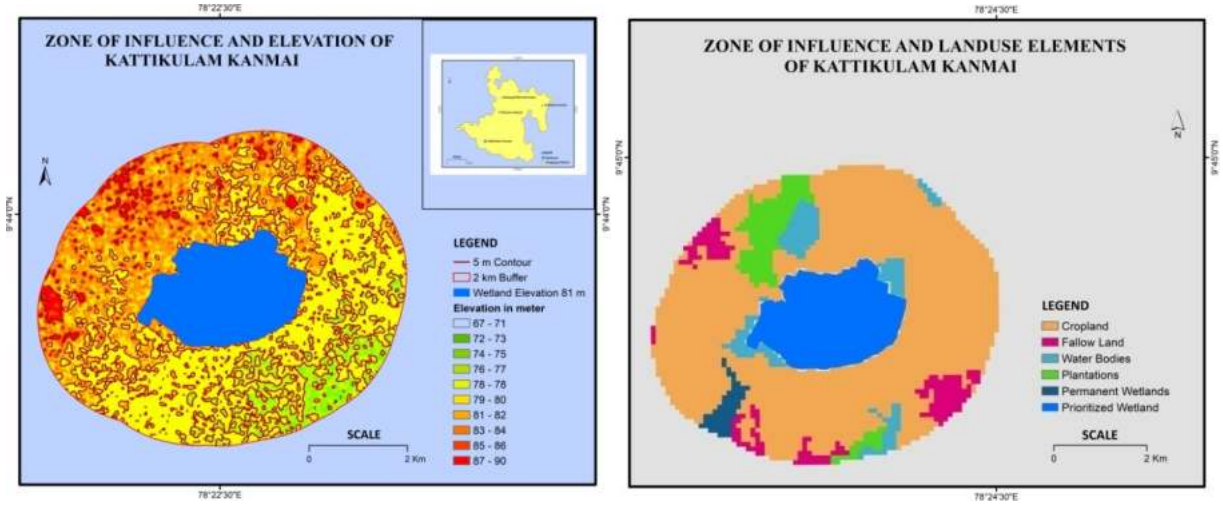
Table 21.6h: List of Mammal species recorded along the Kattikulam Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

Map 21.4: Comparative Google imagery for Kattikulam Kanmai




Map21.5: Zone of influence around the Kattikulam Kanmai



**Piravalur Kanmai**

**Lake Survey Number**: 111

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as PiravallurLake and Piravallur Kanmai (Plate 49).

1.2 Villages that surround the wetland include Piravallur, Chignipatty and Keelapoongudi.

1.3 & 1.4 The lake is based in Sivagangai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 59'07.7" N; 09° 57'59.8" N; and Longitude: 078° 30'29.4" E; 078° 29'47.8" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Sivagangai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 211 hectares (Map 21.6).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 2.0 meters for the wetland.

2.4 The elevation of the wetland is 99 to 100 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area.

b) The water in the wetland is mostly of intermittent nature with regular occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters. The water during the rains last for just up to three months.

c) The water also helps in replenishing the groundwater.

d) The pH of the water was not recorded as the wetland was completely dry.

e) The lake has fresh water as informed by the locals.

f) The wetland has excess of *Prosopis* vegetation and other weeds invaded into the wetland. However, in some patches the locals do farming by harvesting the bore water which is dug up to 150 feet. The region has received very scanty rains with water that does not last long.

2.6 Climatic setting

a) Rainfall for the month of January in Sivagangai was 4.1 mm.

2.7 The area of zone of influence is 2701.46 hectares with a fixed buffer area of 2 kms around the wetland(Map 21.7).

2.8 The major land use around the wetland comprised of

| | | |
|---|---|---|
| Forest 0%; | Grassland/Scrubland 30%; | |
| Agriculture 45%; | Settlements (rural) 10%; | |
| Settlements (Urban) 0%; | Industrial 0%; | barren land 15% |

2.9. The comparison of the wetland for the years 2011 and 2017 is given in Map 21.6 & 21.7.

**Section III- Biodiversity**

3.1 List of Plant species: 25 species of plants were recorded around the wetland during our visit (Table 21.7).

3.2 List of animal species: 27 animal species including 3 domestic species were recorded during the survey (Table 21.8a-e).

3.3 Species of Conservation importance: One near Threatened birds specie was observed during the survey (Table 21.8a-e).

3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: The region was totally water scarse due to very poor rainfall and hence there was no invasive fauna recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as it is rainfall dependent.
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 There is no Fishery undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is totally neglected and not paid much attention mainly due to lack of rain.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland does not have any temples and other religious institutions along its bank.
4.10 There are agriculture or plantation activities within the wetland.
4.11 The wetland provides a suitable habitat for birds as we also recorded the local and bird species during our survey.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is no withdrawal of water for agriculture as the agriculture is practiced within the wetland.
5.6 The region is completely water scarse.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow as it is dependant on rainfall only.
6.2 There are invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland. However the major problem of the wetland is less amount of water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The feeder channel should be undertaken to revive the wetland that provided to the villagers around the wetland until about 10 years ago.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Piravallur Kanmai Lake.

Manikandan S., Indiramma P. and Rajesh T. (2013) Village Wise Drought Mitigation Measures -A Case Study Using Remote Sensing and GIS in Sivaganga Taluk. *International Journal of Emerging Science and Engineering (IJESE).*2(2): 36-40.

Table 21.7: List of Plant species recorded along the Piravalur Kanmai

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Crotalaria pallida* | Smooth Rattlepod | --- | Fabaceae | Native | NA |
| 5 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 6 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 7 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 8 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 9 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 10 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 11 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 12 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 13 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 14 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 15 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 16 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 17 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 18 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 19 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, | Arecaceae | Native | NA |
| 20 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 21 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 22 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |
| 23 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 24 | *Perotis indica* | *Indian comet grass* | Narival,Kudiraival pullu, | Poaceae | Native | NA |
| 25 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 21.8a: List of Insects recorded along the Piravalur Kanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 21.8b: List of Butterflies recorded along the Piravalur Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Lime Butterfly | *Papilio demoleus* | Papilionidae | Uncommon |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 4 | Crimson Tip | *Colotis danae* | Nymphalidae | Uncommon |
| 5 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 6 | Small Grass jewel | *Freyeria putli* | Polyommatinae | Common |
| 7 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 8 | Tawny Coster | *Acraea violae* | Acraeinae | Common |

Table 21.8c: List of Dragonflies recorded along the Piravalur Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 21.8d: List of Birds recorded along the Piravalur Kanmai

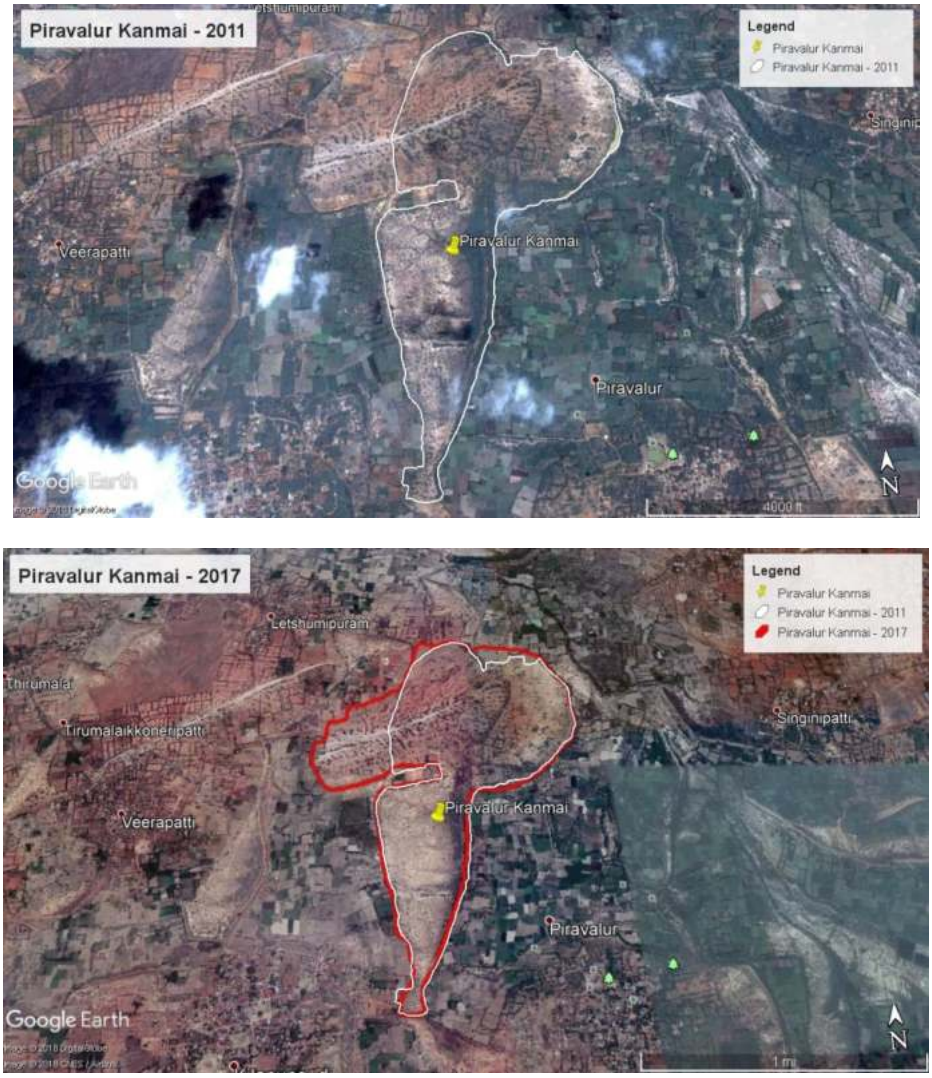
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 2 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 3 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 4 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 5 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 6 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 7 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 8 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 9 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 10 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

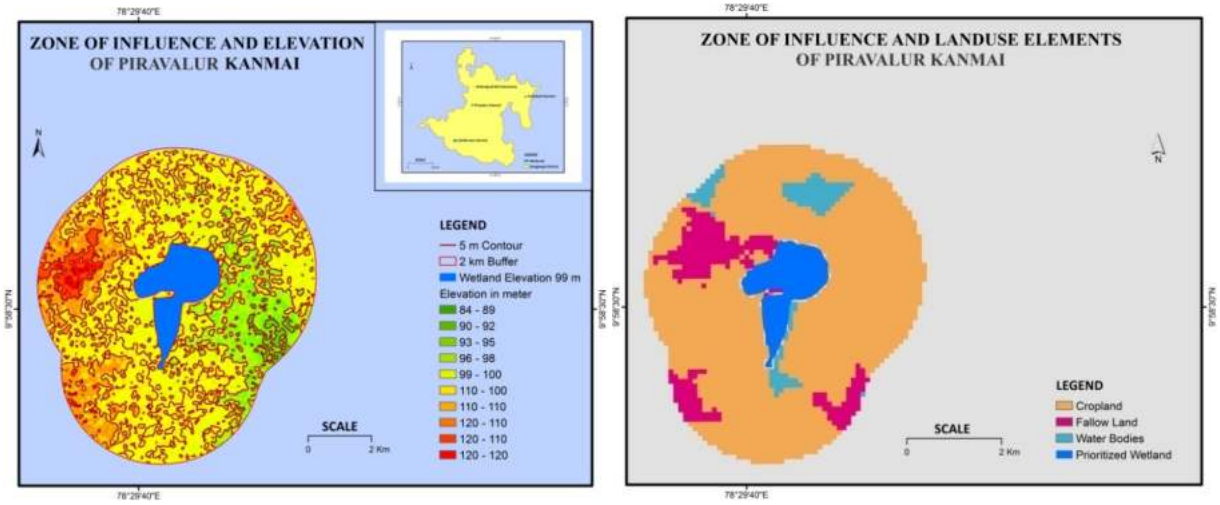
Table 21.8e: List of Mammals recorded along the Piravalur Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 21.6: Comparative Google imagery for Piravalur Kanmai**




**Map 21.7: The zone of influence around the Piravalur Kanmai.**



**Vettangudi Bird Sanctuary**

Vettangudi Bird Sanctuary, comprises three village ponds, viz. Periya and Chinna Kollukudipatti and Vettangudipatti in Sivagangai district. This sanctuary is protected by the Forest Department and by the local community informally. The wetlands receive water during the rainy season that dries down during the winter and remains dessicated throughout the summer.

**Lake Survey Number:** 87.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Vetanguddipatty Lake (Plate 49) also known as Vetanguddi Bird Sanctuary, Periya Kollukudipatty pond.

1.2 Villages that surround the wetland include Vetanguddipatty, Periyakullukudipatty, Chinnakullukudipatty, Krishnampuram, Ayyapatty, Muthyanagar, Krishnampatty, Pudhupatty, Chitrapatty and Kottaipatty.

1.3 & 1.4 The lake is based in Shivagangai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10°06'30.0" N; 10°06'32.6" N; 10°06'34.7" N; 10°06'37.3" N; 10° 06'38.7"N; and Longitude: 078°30'36.3" E; 078°30'37.6" E; 078°30'39.5"E; 078°30'40.4" E; 078°30'51.0" E;

1.6 The wetland is a Protected Area and a Sanctuary.

1.7 The wetland comes under the jurisdiction of Tamil Nadu Forest Department.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 39.3 hectares (Map 21.8).

2.2 The Wetland type - the wetlands belongs to the Man made (inland) category in the sub category intermittent seasonal lakes (water is present for a few months during the monsoon). The wetland is a complex of three lakes.

2.3 Based on the secondary information the average depth is 3.5 meters for the wetland.

2.4 The elevation of the wetland is 122 to 124 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is intermitent nature with some water is present only for a few months, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the two of the lakes had some water while the third wetland was completely dry.
c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.
d) The pH of the water was form 7.2 to 8.0.
e) The lake has fresh water and the salinity recorded was form 0.173 to 0.532 ppt for the two wetlands
f) The wetland had aquatic vegetation like *Ipomoea* and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Sivagangai was 4.1 mm.
b) The atmospheric temperature varied between 27.2 and 29.1°C and the humidity was form 49 to 58 %

2.7 The area of zone of influence is 2077.7 hectares with a fixed buffer area of 2 kms around the wetland (Map 21.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 20%; | Grassland/Scrubland 0% |
| Agricultural lands 75 %; | Settlements (rural) 5%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2012 and 2017 is given in Map 21.8 & 21.9.

**Section III- Biodiversity**

3.1 List of Plant species: 53 species of plants were recorded around the wetland during our visit (Table 21.9).

3.2 List of animal species: 95 animal species including 3 domestic species were recorded during the survey (Table 21.10a-h)

3.3 Species of Conservation importance: Two Near-Threatened species of birds were and one near threatened species of fish were observed during the survey (Table 21.10a-h).

3.4 Major Pla.nt invasive alien species and extent of invasion: 13 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. However, the water is used for agricultural activities. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 There farmlands around use the overflow water for agriculture.

4.3 Fishery is undertaken when the water is available.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no runoff form the surrounding area as it is a water deficient area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present.

4.11 The site adjoining the sanctuary is majorly used by the locals for grazing their cattle and goats.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 There is very good amount of agriculture around the wetland.

5.4 Grazing by the cattle is undertaken outside the sanctuary area.

5.5 There is no withdrawal of water for agriculture or fishery purpose.

5.6 The wetland has faced drought for the past 5-7 years.

5.7 The locals are well aware of the importance of the wetland due to the awareness activities conducted by the forest department.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing drought condition for the past 5 years.

**Section VII Notification Category**

The wetland is a Bird Sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The agriculture practices around the wetland should be taken care and it should be seen that it does not encroach into the sanctuary area.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Vetangudi**


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Chandrasekaran S., Saraswathy K., Saravanan S., Kamaladhasan N. and Arun Nagendran N. (2014) Impact of *Prosopis juliflora* on nesting success of breeding wetland birds at Vettangudi Bird Sanctuary, South India. *Current Science*. 106(5): 676-678.

Collar N.J., Andreev A.V., Chan S., Subramanya S., Tobias J. A., Rudyanto. and Crosby M.J. (2001) Spot-billed pelican (*Pelecanus philippensis*) Threatened birds of Asia, Birdlife International (2001) Threatened birds of Asia: the Birdlife International Red Data Book. Cambridge, UK: Birdlife International, Page 68-103, ISBN 0 946888 442.

Jayakumar S. and Muralidharan S. (2010) Diversity of Colonial Nesting Birds in Different Heronries of Tamil Nadu. Proceedings of the UGC Sponsored National Conference on Modern trends in Biodiversity Conservation and its sustainable utilization. pp. 7-18.

Jayakumar S. and Muralidharan S. (2014) Diversity and Richness of Water birds in Select Wetlands of Tamil Nadu, in proceedings of Third Indian biodiversity congress (IBC), organized by School of Public Health SRM University 18th 20, Perspectives on Biodiversity of India, Vol. II, Part I.

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Subramanya S. (2005) Heronries of Tamil Nadu. *Indian Birds.* 1(6): 125-148.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532

Table 21.9: List of Plant species recorded along the Vettangudi Bird Sanctuary

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Corchorus aestuans* | East Indian Mallow, Jute, | | Malvaceae | Native | |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 7 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 11 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 12 | *Dodonaea viscosa* | Hop Bush | Virali | Sapindaceae | Native | NA |
| 13 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 14 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 15 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 16 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 17 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 18 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 19 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 20 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 21 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 22 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 23 | *Bidens pilosa* | Beggar Tick | Mukkuthi | Asteraceae | Exotic | NA |
| 24 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 25 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 26 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 27 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 28 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 29 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 30 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 31 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 32 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 33 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 34 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 35 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 36 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 37 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 38 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 39 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 40 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 41 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 42 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 43 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 44 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 45 | *Euphorbia antiquorum* | Triangular Spurge | Chaturakalli, | Euphorbiaceae | Native | |
| 46 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 47 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 48 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 49 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 50 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 51 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 52 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |
| 53 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

Table 21.10a: List of Insects recorded along the Vettangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Grasshopper species | *Chrotogonus trachypterus* | Pyrgomorphidae |
| 3 | Cow bug | *Oxyrachis tarandus* | Membracidae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Transverse lady beetle | *Coccinella transversalis* | Coccinellidae |
| 6 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 9 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 21.10b: List of Butterflies recorded along the Vettangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 5 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 11 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 12 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 13 | Psyche | *Leptosia nina* | Pierinae | Common |
| 14 | Zebra Blue | *Leptotes plinius* | Polyommatinae | Common |
| 15 | Common Pierrot | *Castalius rosimon* | Polyommatinae | Common |
| 16 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 17 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 18 | Guava Blue | *Virachola isocrates* | Theclinae | Common |
| 19 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 20 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 21 | Common Crow | *Euploea core* | Danainae | Common |
| 22 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 23 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 24 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 25 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 21.10c: List of Dragonflies recorded along the Vettangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |
| 7 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |

Table 21.10d: List of Arachnida recorded along the Vettangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 21.10e: List of fishes recorded form the Vettangudi Bird Sanctuary

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 21.10f: List of Reptiles recorded along the Vettangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 21.10g: List of Birds recorded along the Vettangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Oriental Honey-buzzard | *Pernis ptilorhynchus* | Accipitridae | Least Concern |
| 8 | White-eyed Buzzard | *Butastur teesa* | Accipitridae | Least Concern |
| 9 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 10 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 11 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 12 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 13 | Laughing Dove | *Stigmatopelia senegalensis* | Columbidae | Least Concern |
| 14 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 15 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 16 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 17 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 18 | Common Hoopoe | *Upupa epops* | Upupidae | Least Concern |
| 19 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 20 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 21 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 22 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 23 | Coppersmith Barbet | *Megalaima haemacephala* | Megalaimidae | Least Concern |
| 24 | Common Woodshrike | *Tephrodornis pondicerianus* | Tephrodornithidae | Least Concern |
| 25 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 26 | Indian Paradise-flycatcher | *Terpsiphone paradisi* | Monarchidae | Least Concern |
| 27 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 28 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 29 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 30 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 31 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 32 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 33 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 34 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 35 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 36 | Oriental Magpie Robin | *Copsychus saularis* | Muscicapidae | Least Concern |
| 37 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 38 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 39 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 40 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 41 | Indian Silverbill | *Euodice malabarica* | Estrildidae | Least Concern |
| 42 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

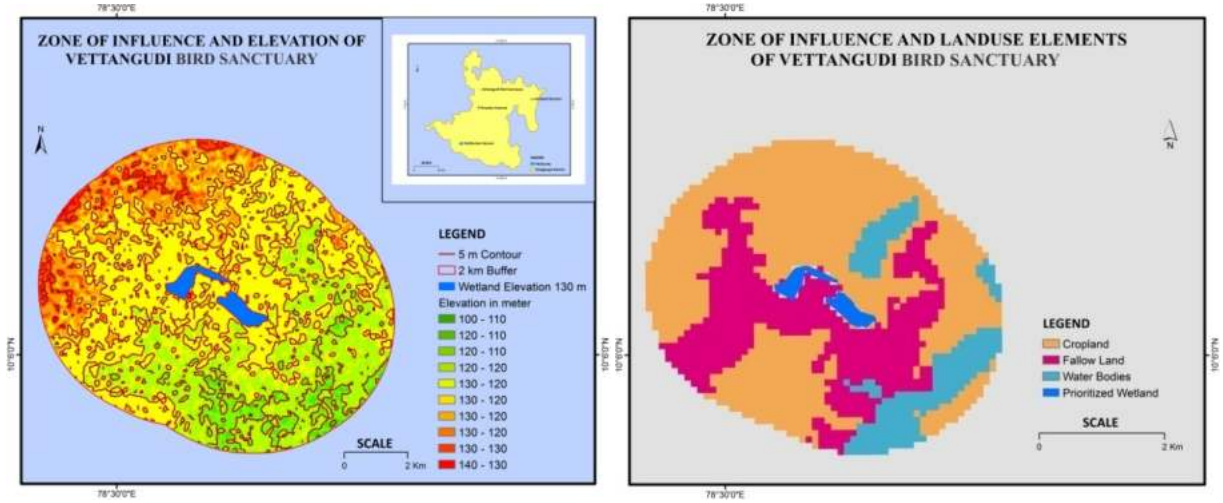
Table 21.10h: List of Mammals recorded along the Vettangudi Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 21.8: Comparative Google imagery for Vettangudi Bird Sanctuary**




**Map 21.9: The zone of influence around the Vettangudi Bird Sanctuary.**



## 22. Thanjavur district

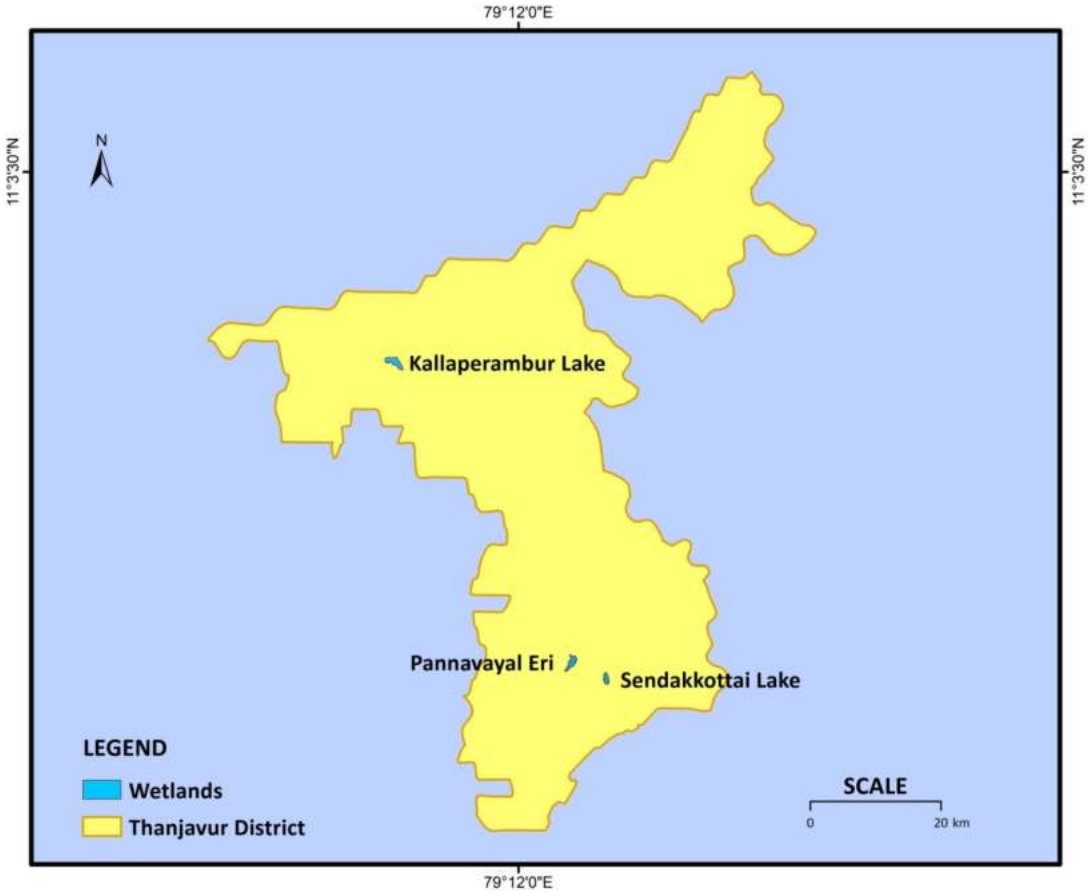
### 1. Introduction

Thanjavur district is in the east coast of Tamil Nadu. The District is bound by Coloroon on the Northwhich separates it form Ariyalur and Tiruchirapalli district; Thiruvarur and Nagapattinam districts on the east; Palk Strait and Pudukottai on the South and Pudukottai and Tiruchirapalli on the West.

Thanjavur District is the Rice Bowl of Tamil Nadu. It was the cultural capital of the country in 1790. Thanjavur gained prominence during the period of Chola Kings, who made it as their capital. Thereafter, it was ruled by Nayaks and Maratta Kings, who nurtured art and culture.

Total geographic area of Thanjavur is 3348.45 km². Total area under wetland is 34184 ha, which includes 893 small wetland (<2.25 ha). Lakes/Ponds occupy 17.89% of wetland area. The second major wetland type is Tanks/Ponds. There are 575 Tanks/Ponds with 5555 ha area (16.25%). The other wetland types are lagoons (3935 ha), and River/Stream (12738 ha).

SACON during 2004 had prioritized one wetland form Thanjavur district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected this wetland to assess its present potential for conservation. (Map 22.1).




**Map 22.1: Wetlands of Thanjavur district assessed for Prioritization**

**Observations**

Of the three wetlands selected in the district, Kallaperambur is the largest while Sendakottai is the smallest of the three wetlands. Around the three wetlands, we recorded 69 plant species both aquatic and terrestrial including 11 invasive species (Table 22.1). The faunal components totaled 81 species with the representation of 39 bird species including the wetland birds. The field study revealed that all the three wetlands were dry and hence the trophic status was not assessed except for Kallaperambur who had mesotrophic status (Table 22.2). However, the soil parameters indicate the hydric status of the wetlands with differing mineral levels.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, habitat for the aquatic and associated life forms. The threats observed were increasing growth of invasive species, mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage and agricultural practices that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation

1. Sendakkottai Lake
2. Pannavayal Eri
3. Kallaperambur Lake

Table22.1: The flora and fauna reported form the wetlands of Thanjavur District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Kallaperambur Lake | 39(9) | 7 | 4 | 9 | 2 | 11 | 1 | 3 | 32 | 4 |
| 2 | Pannavayal Eri | 36(9) | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 17 | 2 |
| 3 | Sendakkottai Lake | 22(4) | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 6 | 0 |
| | Total | 69(11) | 8 | 5 | 9 | 2 | 11 | 1 | 2 | 39 | 4 |

Table 22.2: The water and soil quality assessed form the wetlands of Thanjavur District

| **District Name** | Thanjavur | | |
|---|---|---|---|
| **Wetland Name** | Sendakkottai Lake | Panavayal Eri | Kallaperambur Lake |
| **Wetland area (ha)** | 113 | 197 | 246 |
| **Buffer Area in Hectare (ha)** | 2170.26 | 2691.29 | 2815.12 |
| **Air Temperature °C** | 31 | 31.8 | 27 |
| **Water Temperature °C** | | | |
| **Humidity %** | 71 | 62 | 62 |
| **Nutrients in Water** | not known | not known | Mesotrophic |
| **Water pH** | | | |
| **Water TDS ppm** | | | |
| **Water Conductivity ppm** | | | |
| **Light Penetration cms** | | | |
| **Water Salinity ppt** | | | |
| **DO mg/L** | | | |
| **PO4P mg/L** | | | |
| **Water Na ppm** | | | |
| **Water K ppm** | | | |
| **Water Li ppm** | | | |
| **Water Ca ppm** | | | |
| **Soil Colour code** | 10YR 7/4 | 5YR 5/4 | 10YR 5/2 |
| **Soil Colour** | Very Pale Brown | Reddish Brown | Grayish Brown |
| **Soil pH** | 8.02 | 7.27 | 8.02 |
| **Soil TDS ppm** | 189 | 120 | 28.8 |
| **Soil Conductivity ppm** | 266 | 1685 | 63.6 |
| **Soil Salinity ppt** | 0.129 | 0.083 | 0.11 |
| **Soil Na ppm** | 24.6 | 16.5 | 26.9 |
| **Soil K ppm** | 4 | 5.6 | 2.6 |
| **Soil Li ppm** | 0.1 | 0 | 0 |
| **Soil Ca ppm** | 17.6 | 7.3 | 17.7 |

**Kallaperambur Lake**

The Kallaperambur lake is situated 15 km west of Thanjavur (Map 22.1). It is an important migratory waterbird habitat of Tamil Nadu, Southern India. On one side of the lake is the road connecting Thanjavur and Budalur and on the other sides of the lake are bunds. Pollution by the use of organochlorine and organophosphorous pesticides such as Monocrotophos, BHC and Karatae and fertilizers such as DAP (Di-Ammonium Phosphate), Potash and Urea in the surrounding villages, irrational exploitation of fishery resources of the lake and poaching of birds by people during night hours are some of the major conservatory issues of the lake. There is also a conflict between the local villagers who use this lake water for irrigation and the Forest Department regarding the maintenance of water level.

**Lake Survey Number:** 431

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kallaperambur Periya Lake (Plate 50).

1.2 Villages that surround the wetland include Kallaperambur, Rayanthur, Gunamangalam, Melakarampet, Keelakarampet, Aalagudi.

1.3 & 1.4 The lake is based in Thanjvur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 48'11.2" N; 10° 48'06.0" N; 10° 48'10.4" N; 10° 48'09.4" N; and Longitude: 079° 01'57.2" E; 079° 01'57.6" E; 079° 01'48.4" E; 079° 01'32.0" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 246 hectares (Map 22.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 53 to 124 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and River Vennar.
b) The water in the wetland is temporary in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the agriculture.
d) The pH of the water was not recorded as during the time of our visit the wetland was completely dry
e) The lake has fresh water as per the secondary information as the lake was dry we did not estimate the salinity
f) The wetland had *Ipomoea sp.* and was dominated by *Prosopis juliflora* and Grass variety.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Thanjavur was 0.0 mm.
b) The atmospheric temperature varied between 26.1 and 27°C and the humidity was form 61 to 62 %

2.7 The area of zone of influence is 2815.12 hectares with a fixed buffer area of 2 kms around the wetland (Map 22.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 40%; |
| Agricultural lands 50%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2009 and 2017 is given in Map 22.2& 22.3.

**Section III- Biodiversity**

3.1 List of Plant species: 37 species of plants were recorded around the wetland during our visit (Table 22.3).
3.2 List of animal species: 73 animal species including 3 domestic species were recorded during the survey (Table 22.4a-i).
3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 22.4a-i).
3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion - no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The Village Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the agriculture fields.
4.3 Fishery is not undertaken as the wetland has water only for around 6 months.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it is a water scarse area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage and as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species during monsoon.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken on a commercial basis.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure with increasing encroachment and agriculture activities.
6.3 The wetland water quality and the ecological character is changing rapidly.
6.4 The wetland is an ideal bird habitat however, there is regular hunting of birds that is affecting the birds safety. Moreover, the wetland was promoted to be designated as a Bird Sanctuary however the efforts of the forest department were discouraged by the village panchayat.

**Section VII Notification Category**

The wetland is not is a Bird Sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Kallaperambur Lake**


Balamurugan R. (2009) A survey of physico-chemical parameters of water and bird population in Kallaperambur lake, Thanjavur District, Tamilnadu, South India. M.Phil., dissertation submitted to Dept. of Zoology, Rajah Serfoji Govt. College, Thanjavur, Tamilnadu, South India.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Vachanth M.C. (2014) Studies on the ecology of water birds in the Kallaperambur Lake, Thanjavur District South India, *Ph.D., Thesis*, Bharathidasan University, Tiruchirappalli, Tamil Nadu.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, Pp. 532.


Table 22.3. List of Plant species recorded along the Kallaperambalur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 7 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 8 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 9 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 12 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 13 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 14 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 15 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 16 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 17 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 18 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 19 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 20 | *Argyreia sericea* | Silky Morning Glory | Kanvalipoo | Convolvulaceae | Native | NA |
| 21 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 22 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 23 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 24 | *Solanum nigrum* | Black nightshade, Blackberry nightshade, | Manathakkali | Solanaceae | Native | NA |
| 25 | *Barleria acuminata* | Long-flower Barleria | Vellai Kurinji | Acanthaceae | Native | NA |
| 26 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 27 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 28 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 29 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 30 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 31 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 32 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 33 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 34 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 35 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 36 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 37 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 22.4a: List of Insects recorded along the Kallaperambur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Mantis Egg (*Ootheca)* | | Mantodae |
| 3 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 22.4b: List of Butterflies recorded along the Kallaperambur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 4 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 5 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 7 | Common Crow | *Euploea core* | Danaidae | Common |
| 8 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 9 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 22.4c: List of Dragonflies recorded along the Kallaperambur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 22.4d: List of Arachnida recorded along the Kallaperambur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Wolf Spider | *Lycosidae sp.* | Lycosidae |

Table 22.4e: List of Fishes recorded form the Kallaperambur Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 9 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 10 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 22.4f: List of Amphibians recorded form the Kallaperambur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 22.4g: List of Reptiles recorded along the Kallaperambur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake | *Xenochrophis sp.* | Colubridae | - |

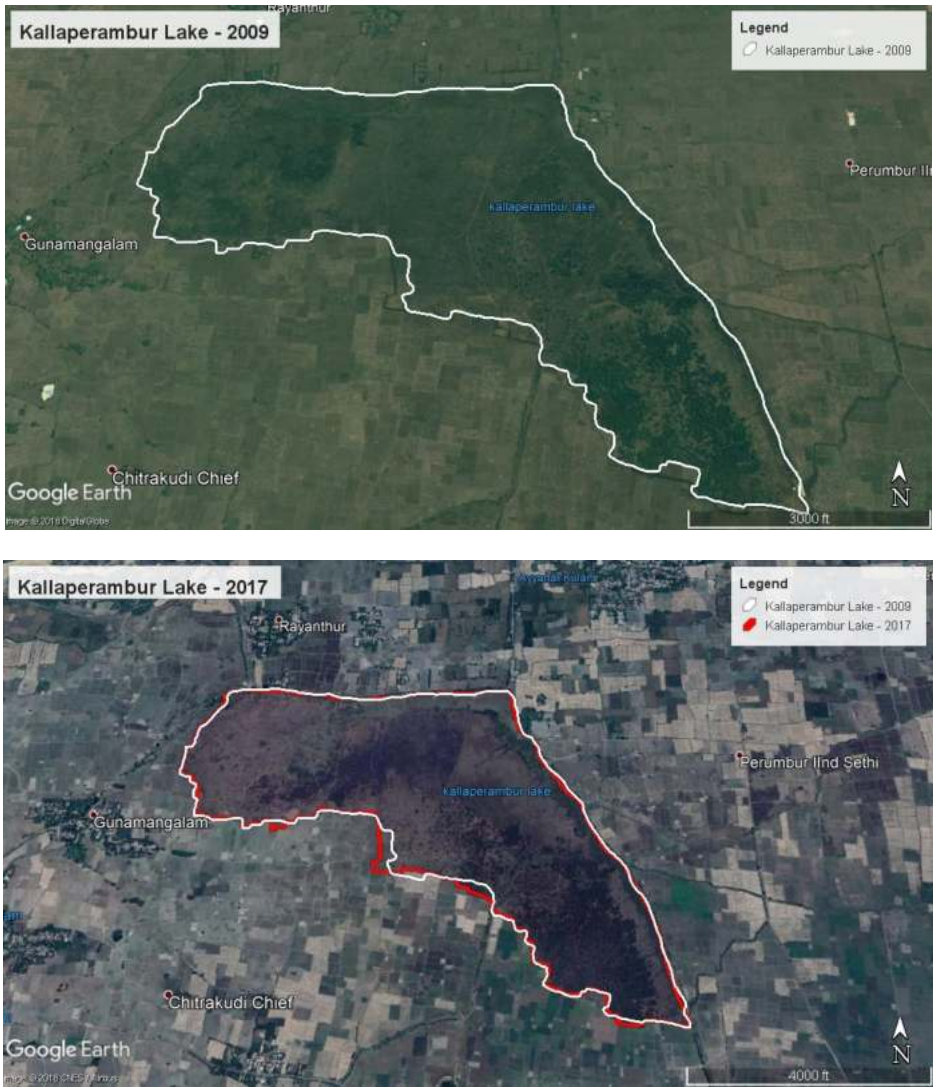
Table 22.4h: List of Birds recorded along the Kallaperambur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 8 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 9 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 10 | Common Snipe | *Gallinago gallinago* | Scolopacidae | Least Concern |
| 11 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 12 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 13 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 14 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 15 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 16 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 17 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 18 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 19 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 22 | Red-rumped Swallow | *Cecropis daurica* | Hirundinidae | Least Concern |
| 23 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 24 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 25 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 26 | Zitting Cisticola | *Cisticola juncidis* | Cisticolidae | Least Concern |
| 27 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 28 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 29 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 30 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 31 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 32 | Yellow Wagtail | *Motacilla flava* | Motacillidae | Least Concern |

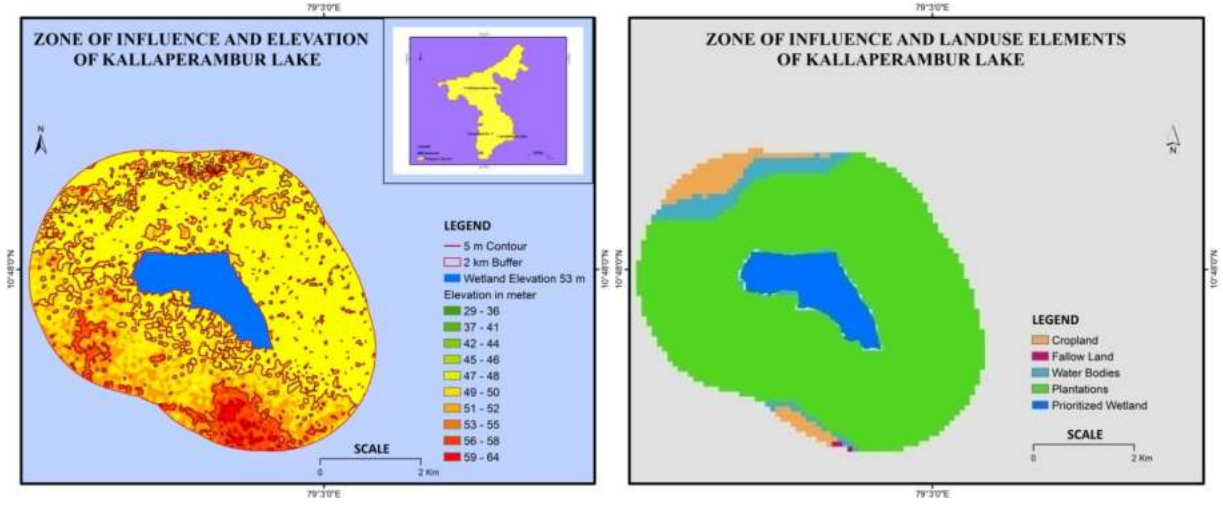
Table 22.4i: List of Mammals recorded along the Kallaperambur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 22.2: Comparative Google imagery for Kallaperambur Lake**




**Map 22.3: The zone of influence around the Kallaperambur lake.**



**Pannavayal Eri**

**Lake Survey Number:** Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Pannavial eri (Plate 50).

1.2 Villages that surround the wetland include Pannavial.

1.3 & 1.4 The lake is based in Thanjvur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 22'24.7" N; 10° 22'30.9" N; 10° 22'40.2" N; 10° 22'56.0" N; 10° 23'05.0" N and Longitude: 079° 16'00.2" E; 079° 16'17.1" E; 079° 16'31.9" E; 079° 16'43.8" E; 079° 16'49.9" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 197 hectares (Map 22.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 3 meters for the wetland.

2.4 The elevation of the wetland is 22 to 30 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and River Cauvery.
b) The water in the wetland is temporary in nature and last for 6 months.
c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds the agriculture and Cauvery River.
d) The pH of the water was not recorded as during the time of our visit the wetland was completely dry
e) The lake has fresh water as per the secondary information as the lake was dry we did not estimate the salinity
f) The wetland had *Ipomoea sp.* and was dominated by *Prosopis juliflora* and Grass variety.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Thanjavur was 0.0 mm.
b) The atmospheric temperature was 31.8°C and the humidity was 62 %

2.7 The area of zone of influence is 2691.28 hectares with a fixed buffer area of 2 kms around the wetland (Map 22.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 5% |

2.9. The comparison of the wetland for the years 2007 and 2018 is given in Map 22.4 & 22.5.

**Section III- Biodiversity**

3.1 List of Plant species: 35 species of plants were recorded around the wetland during our visit (Table 22.5).

3.2 List of animal species: 29 animal species including one domestic species were recorded during the survey (Table 22.6a-g).

3.3 Species of Conservation importance - Threatened species of birds were not observed during the survey (Table 22.6a-g).

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Prosopis juliflora* and *Ipomoea sp.*formed nearly major part of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The Village Panchayat provides drinking water form the borewell water and Cauvery at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water joins the agriculture fields and River Cauvery.
4.3 Fishery is undertaken as the wetland has water only for around 6 months and given tenders are by PWD.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area as it is a water scarse area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage and as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species during monsoon.
4.15 There is mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken on a commercial basis.
5.2 There is no agriculture undertaken outside the wetland.
5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure with increasing encroachment and agriculture activities.
6.3 The wetland water quality and the ecological character is changing rapidly.
6.4 The wetland is an ideal bird habitat however there is regular hunting of birds that is affecting the birds safety.
6.5 Sand mining is becoming a threat.

**Section VII Notification Category**

The wetland is not is a Bird Sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available for Pannavayal Lake

Table 22.5: List of plants species recorded along the Pannavayal Eri

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 2 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Albizia saman* | Rain Tree | Thoongumoonji maram | Fabaceae | Exotic | NA |
| 5 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 6 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 7 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 8 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 9 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 10 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 11 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 12 | *Glinus oppositifolius* | Jima | Pampantra, Thura poondu | Molluginaceae | Native | NA |
| 13 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 14 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 15 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 16 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 17 | *Tylophora indica* | Indian Ipecac, Indian ipecacuanha, emetic swallow-wort, vomiting swallow-wort | kalutai-p-palai, naccaruppan, nay-p-palai | Apocynaceae | Native | |
| 18 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 19 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulacea e | Invasive | NA |
| 20 | *Barleria buxifolia* | Box-Leaved Barleria | Kattimullu, Rosmullippuntu | Acanthaceae | Native | NA |
| 21 | *Barleria strigosa* | Barleria terminalis | Nilamparam | Acanthaceae | Native | NA |
| 22 | *Ocimum tenuiflorum* | Holy basil,tulsi | Tulsi | Lamiaceae | Native | NA |
| 23 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 24 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 25 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 26 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 27 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 28 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 29 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 30 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 31 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 32 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 33 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |
| 34 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 35 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 22.6a: List of Insect species recorded along the Pannavayal Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 2 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 22.6b: List of Butterfly species recorded along the Pannavayal Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 22.6c: List of Odonata species recorded along the Pannavayal Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 22.6d: List of Arachnida species recorded along the Pannavayal Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 22.6e: List of Reptile species recorded along the Pannavayal Eri

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 22.6f: List of Bird species recorded along the Pannavayal Eri

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 4 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 5 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 6 | Coppersmith Barbet | *Megalaima haemacephala* | Megalaimidae | Least Concern |
| 7 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 8 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 9 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 10 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 11 | White-browed Bulbul | *Pycnonotus luteolus* | Pycnonotidae | Least Concern |
| 12 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 13 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 14 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 15 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 16 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 17 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |

Table 22.6g: List of Mammal species recorded along the Pannavayal Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

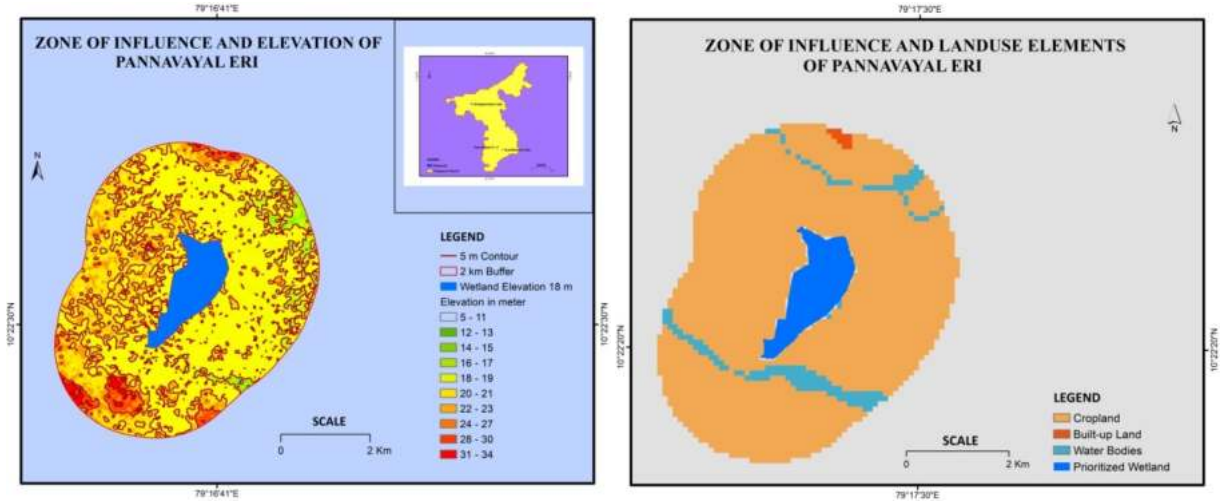
**Map 22.4: Comparative Google images for Pannavayal Eri**







**Map 22.5: Zone of Influence around the Pannavayal Eri**



**Sendakkottai Lake**

**Lake Survey Number:** Not Provided

**Section I : Identification, Location and Jurisdiction**

1.1 Commonly known as Senthakottai eri (Plate 51).

1.2 Villages that surround the wetland include Akravial.

1.3 & 1.4 The lake is based in Pattukotai taluka in Thanjvur disttrict of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 21'30.9" N; 10° 21'29.4" N; 10° 21'31.4" N; 10° 21'35.6" N; 10° 21'29.3" N; and Longitude: 079° 18'59.8" E; 079° 19'07.3" E; 079° 19'18.0" E; 079° 19'23.6" E; 079° 19'27.2" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 113 hectares (Map 22.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 3 meters for the wetland.

2.4 The elevation of the wetland is 14 to 18 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall and surrounding catchment area overflow of Agniara River.
b) The water in the wetland is temporary in nature and last for 3 months.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the agriculture and Maharasamutharam River.
d) The pH of the water was not recorded as during the time of our visit the wetland was completely dry
e) The lake has fresh water as per the secondary information as the lake was dry we did not estimate the salinity
f) The wetland had *Ipomoea sp.* and was dominated by *Prosopis juliflora* and Grass variety.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Thanjavur was 0.0 mm.
b) The atmospheric temperature was 31°C and the humidity was 71 %

2.7 The area of zone of influence is 2170.26 hectares with a fixed buffer area of 2 kms around the wetland (Map 22.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2007 and 2018 is given in Map 22.6 & 22.7.

**Section III- Biodiversity**

3.1 List of Plant species: 20 species of plants were recorded around the wetland during our visit (Table 22.7).

3.2 List of animal species: Nine animal species were recorded during the survey (Table 22.8a-c).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 22.8a-c).

3.4 Major Plant invasive alien species and extent of invasion: Four invasive plants including *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion : no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The Village Panchayat provides drinking water form the borewell water and Cauvery at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The overflow water joins the agriculture fields and River Maharasamutharam.

4.3 Fishery is undertaken as the wetland has water only for around 3 months and given tenders are by PWD if the water is present.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no significant runoff form the surrounding area as it is a water scarse area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage and as toilet.

4.12 There is no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland does support local fish species during monsoon.

4.15 There is mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken on a commercial basis.

5.2 There is no agriculture undertaken inside the wetland.

5.3 The locals are well aware of the importance of the wetland due to the water scarcity.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure with increasing encroachment and agriculture activities.

6.3 The wetland water quality and the ecological character is changing rapidly.

6.4 Sand mining is becoming a threat.

**Section VII Notification Category**

The wetland is not is a Bird Sanctuary and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available for Sendakkottai Lake

Table 22.7: List of plant species recorded along the Sendakkottai Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Ceiba pentandra* | Kapok, Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 7 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 8 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 9 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 10 | *Barringtonia acutangula* | Freshwater Mangrove, Indian Oak, Indian Putat | Aram, Kadambu, samudra pazham | Lecythidaceae | Native | |
| 11 | *Opuntia stricta var. dillenii* | Prickly pear | Sappathikalli | Cactaceae | Native | LC |
| 12 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 13 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 14 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 15 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 16 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 17 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 18 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 19 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 20 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 22.8a: List of Butterfly species recorded along the Sendakkottai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |

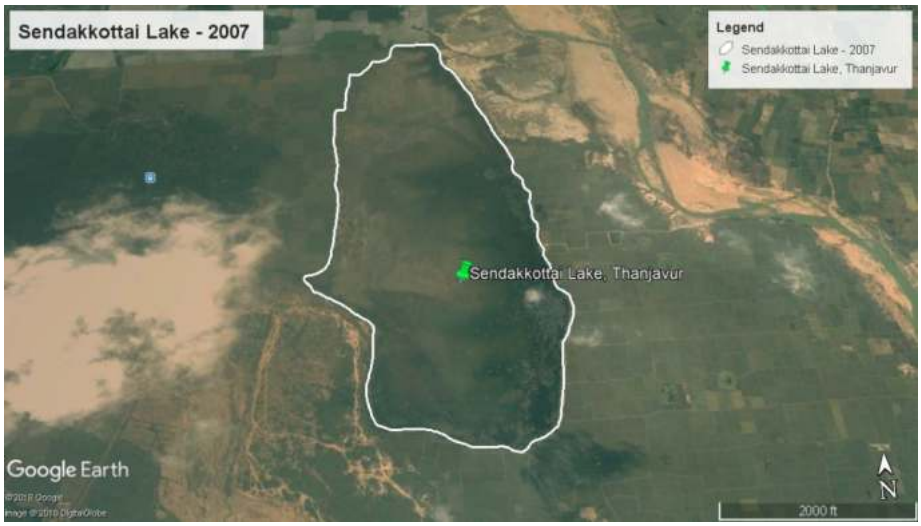
Table 22.8b: List of Reptile species recorded along the Sendakkottai Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 22.8c: List of Bird species recorded along the Sendakkottai Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 2 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 3 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 4 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 5 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 6 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

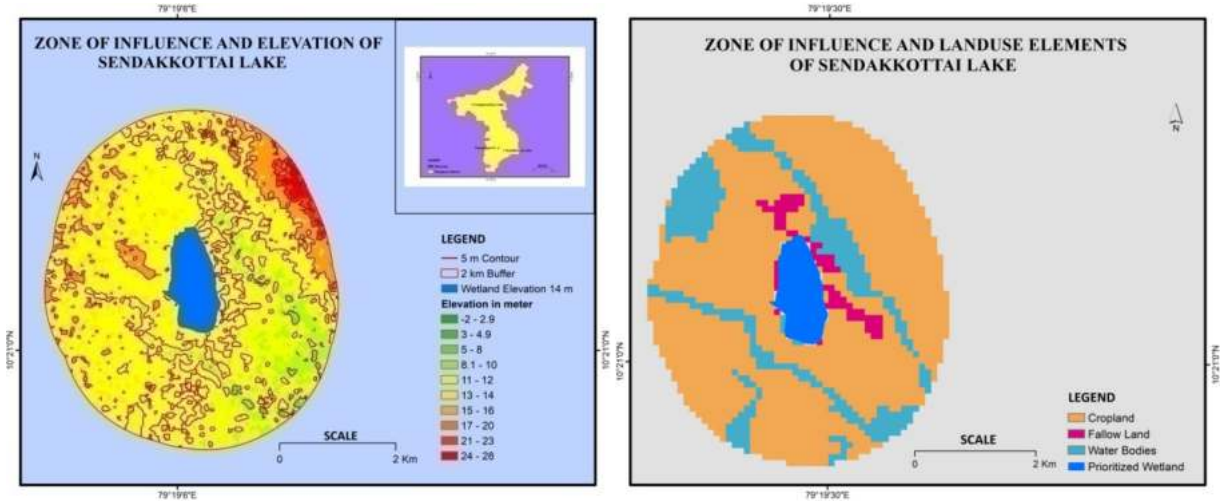
**Map 22.6: Comparative Google imagery for Sendakkottai Lake**







**Map 22.7: Zone of influence around the Sendakkottai Lake**



## 23. Theni District

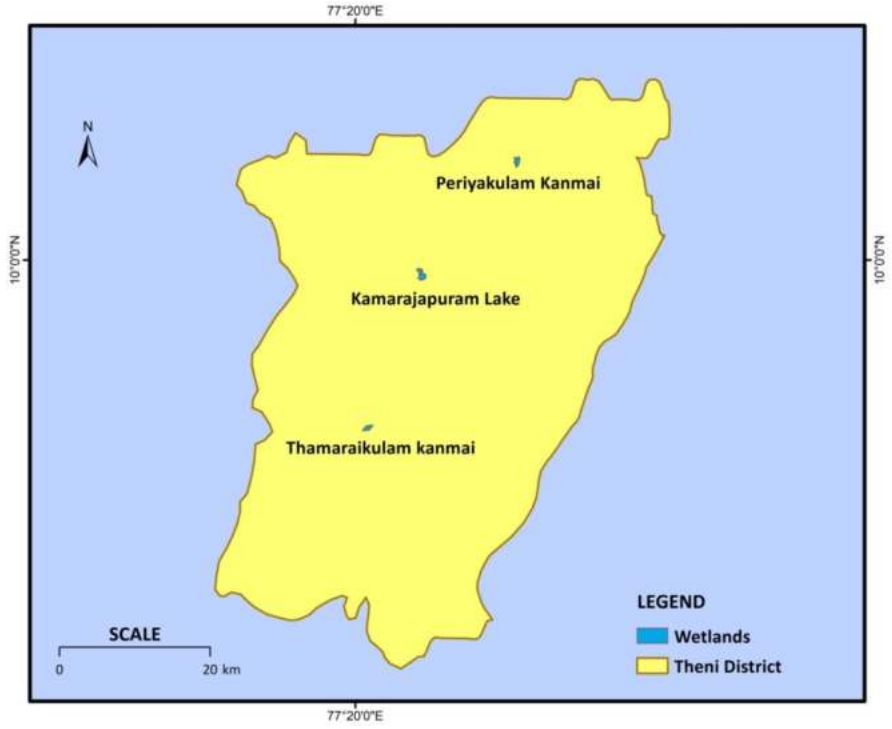
### 1. Introduction

Theni District is bounded by Dindigul District to the north, Madurai District to the east, Virudhunagar District to the southwest, and Kerala state to the west. The district is known for its salubrious climate, hills and lakes. Its economy is mostly agricultural. Silk, cotton, coffee seeds, cardamom and mango are the main product of the district.

Theni District was formed by the bifurcation form the former Madurai District during 1996. Theni District is a district is divided into two natural divisions: The hilly areas are constituted by parts of the three taluks Periyakulam, Uthamapalayam and Andipatti with thick vegetation and perennial streams form the hills on the western side and Cumbum valley, which lies in Uthamapalayam taluk. The Mullai Periyar River, Vaigai River, Kottagudi River, Suruliyar River, Varaganathi River, Manjalar River and Varattaru River flow through the district. The important reservoirs in the district are Mullai Periyar Dam, Vaigai Dam, Manjalaru Dam, Sothuparai Dam, Sanmughanathi Dam, Manalaru Dam and Melmanalaru Dam. Its economy is mostly agricultural. Utilisation of land area for cultivation in Theni district is 40.33%. The forest area in Theni district is about 33.70%. There are 27 forest areas in Theni district constituting a total area of 795.81 $km^2$ (307.26 sq mi).

Total area under wetland is 5293 ha, which includes 83 small wetland (<2.25 ha). Lakes/Ponds occupy 21.46% of wetland area. The other wetland types of the district are Tanks/Ponds (994 ha) and Reservoir (1957 ha).

The wetlands were selected for the present study based on the available data on birds for the wetland (Map 23.1).




**Map 23.1: Wetlands of Theni district assessed for Prioritization**

### Observations

Of the three wetlands selected in the district, Kamarajapuram is the largest while Thamarai kulam is the smallest of the three wetlands. Around the three wetlands, we recorded 88 plant species both aquatic and terrestrial including 16

invasive species (Table 23.1). The faunal components totaled 99 species with the representation of 30 bird species including the wetland birds. The field study revealed that Kamarajapuram wetland was Eutrophic and dry with hydric soils, while the other two wetlands were Mesotrophic in status (Table 23.2). The water quality was comparatively better in Thamarai Kulam lake. The soil is regularly hydrated annually and hence it also forms a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species, mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Kamarajapuram Lake
2. Periyakulam Kanmai
3. Thamaraikulam Kanmai

Table 23.1: The flora and fauna recorded form the wetlands of Theni District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Kamarajapuram Lake | 32 | 4 | 3 | 4 | 2 | 0 | 0 | 2 | 11 | 4 |
| 2 | Periyakulam Kanmai | 42 | 9 | 13 | 8 | 1 | 8 | 2 | 2 | 16 | 3 |
| 3 | Thamaraikulam Kanmai | 58 | 8 | 3 | 8 | 0 | 10 | 0 | 1 | 18 | 4 |
| | Total | 88(19) | 16 | 13 | 15 | 2 | 13 | 2 | 3 | 30 | 5 |

Table 23.2: The water and soil quality assessed form the wetlands of Theni District

| District Name | Theni | | |
|---|---|---|---|
| Wetland Name | Kamarajapuram Lake | Periyakulam Kanmai | Thamaraikulam Kanmai |
| Wetland area (ha) | 116 | 71 | 59.7 |
| Buffer Area in Hectare (ha) | 2213.94 | 2005.92 | 1959.63 |
| Air Temperature °C | 32 | 29.9 | 30.5 |
| Water Temperature °C | | 31.2 | 25.3 |
| Humidity % | 65 | 60 | 66 |
| Nutrients in Water | Eutrophic | Mesotrophic | Mesotrophic |
| Water pH | | 9.1 | 7.8 |
| Water TDS ppm | | 150 | 46.9 |
| Water Conductivity ppm | | 72.1 | 89.9 |
| Light Penetration cms | | 10 | 97 |
| Water Salinity ppt | | 41.1 | 0.043 |
| DO mg/L | | 5.08 | 6.61 |
| PO4P mg/L | | 0.056 | 0.030 |
| Water Na ppm | | 1646 | 608 |
| Water K ppm | | 5.5 | 3.2 |
| Water Li ppm | | 0.6 | 0.3 |
| Water Ca ppm | | 102 | 95.65 |
| Soil Colour code | 7.5YR 6/3 | 10YR 5/6 | 10YR 6/6 |
| Soil Colour | Light Brown | Yellowish Brown | Brownish Yellow |
| Soil pH | 7.86 | 5.5 | 7.26 |
| Soil TDS ppm | 226 | 35.1 | 96.6 |
| Soil Conductivity ppm | 318 | 49.2 | 136 |
| Soil Salinity ppt | 0.152 | 0.029 | 0.068 |
| Soil Na ppm | 13.6 | 2 | 8.2 |
| Soil K ppm | 6.7 | 2.2 | 7.5 |
| Soil Li ppm | 0.1 | 0 | 0 |
| Soil Ca ppm | 22.1 | 1.2 | 4.8 |

**Kamarajapuram Lake**

**Lake Survey Number:** 641

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kamrajapuram Lake (Plate 52), also called as Sodhanai kanmai.

1.2 Villages that surround the wetland include Kodangipatty, Pannaithoppu and Kamrajpuram.

1.3 & 1.4 The lake is based in Theni district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 9° 58'41.6" N; 9° 58'53.8" N; 9° 59'03.4" N; and Longitude: 077° 25'01.1" E; 077° 25'04.0" E; 077° 24'51.5" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 116 hectares (Map 23.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermitent tank.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 326 to 328 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area. It receives water form Kottakudi River canal
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the agricultural lands around the wetland.
d) The pH of the water was not taken as the wetland was completely dry
e) The lake has fresh water however during our study the wetland was dry and did not have any water hence the salinity was not recorded.
f) The wetland had aquatic vegetation like *Ipomoea sp* and other weeds dominating the landscape i.e 90%.

2.6 Climatic setting

a) Rainfall for the month of January 2018 in Theni was 22.8 mm.
b) The atmospheric temperature was 29.1°C and the humidity was 54 %

2.7 The area of zone of influence is 2213.94 hectares with a fixed buffer area of 2 kms around the wetland (Map 23.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 85%; | Settlements (rural) 5%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2008 and 2017 is given in Map 23.2 & 23.3.

**Section III- Biodiversity**

3.1 List of Plant species: 28 species of plants were recorded around the wetland during our visit (Table 23.3).

3.2 List of animal species: 30 animal species including three domestic species were recorded during the survey (Table 23.4a-g).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 23.6a-g).

3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plants including *Prosopis juliflora*,and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Fishing is not undertaken as the wetland is dry.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose or agriculture. The municipal corporation provides drinking water form the borewell water and Mullaperiyar Dam at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the agriculture lands.
4.3 Fishery is not undertaken for commercial purpose, as the wetland is seasonally dry.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage and as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland does not support local fish species as the wetland is seasonally dry.
4.15 There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland due to the role the wetland played during the monsoon floods and cyclone.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of water.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Kamarajapuram Wetland / Sothanai Kanmai

No published literature is available on the wetland.

Table 23.3. List of Plant species recorded along the Kamarajapuram Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 3 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 4 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 5 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 6 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 7 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 8 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 9 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 10 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 11 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 12 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 13 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 14 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 15 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 16 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 17 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 18 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 19 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 20 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 21 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 22 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 23 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 24 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 25 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 26 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 27 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |
| 28 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 23.4 a: List of Insects recorded along the Kamarajapuram Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 2 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 23.5b: List of Butterflies recorded along the Kamarajapuram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 2 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 4 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 23.4c: List of Dragonflies recorded along the Kamarajapuram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 23.4d: List of Arachnida recorded along the Kamarajapuram Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 23.4e: List of Reptile recorded along the Kamarajapuram Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Russell's Viper | *Daboia russelii* | Viperidae | Least Concern |

Table 23.4f: List of Birds recorded along the Kamarajapuram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 2 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 3 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 4 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 5 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 6 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 7 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 8 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 9 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 10 | Purple rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 11 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

Table 23.4g: List of Mammals recorded along the Kamarajapuram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

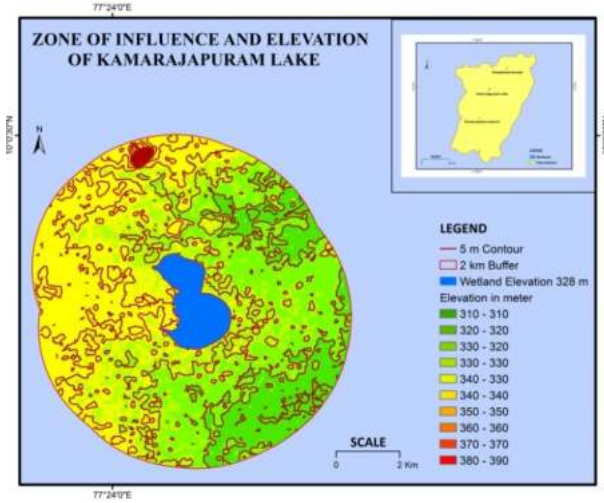
**Map 23.2: Comparative Google imagery for Kamarajapuram Lake**

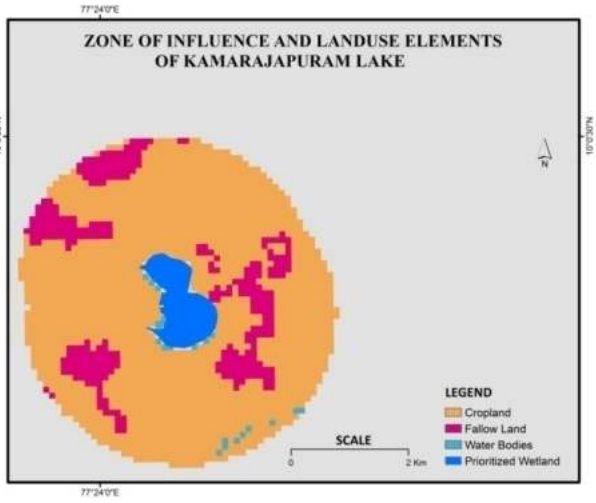






**Map 23.3: The zone of influence around the Kamarajapuram Lake**



**Periyakulam Kanmai**

**Lake Survey Number:** 2058

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Periyakulam Lake (Plate 52). Also called as Periyakulam kanmai.

1.2 Villages that surround the wetland include Thenkarai.

1.3 & 1.4 The lake is based in Periyakulam taluka in Theni district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 07'24.7" N; 10° 07'23.6" N; 10° 07'19.0" N; and Longitude: 077° 31'43.7" E; 077° 31'41.4" E; 077° 31'46.8" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 71 hectares (Map 23.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermitent tank.

2.3 Based on the secondary information the average depth is 1 to 5 meters for the wetland.

2.4 The elevation of the wetland is 293 to 300 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area. It receives water form Sothuparai River canal.
b) The water in the wetland is intermittent in nature.
c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds the agricultural lands around the wetland.
d) The pH of the water was 9.1.
e) The lake has fresh water the salinity recorded was 41.1 ppt.
f) The wetland had *Ipomoea sp., Calotropis gigiantia, Abutilon indicum, Prosopis juliflora* and other weeds that dominated the landscape i.e 90%.

2.6 Climatic setting

a) Rainfall for the month of January 2018 in Theni was 22.8 mm.
b) The atmospheric temperature was 29.9°C and the humidity was 60 %

2.7 The area of zone of influence is 2005.92 hectares with a fixed buffer area of 2 kms around the wetland (Map 23.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 70%; | Settlements (rural) 20%; |
| Settlements (Urban) 10%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 23.4& 23.5.

**Section III- Biodiversity**

3.1 List of Plant species: 38 species of plants were recorded around the wetland during our visit (Table 23.5).

3.2 List of animal species: 62 animal species including three domestic species were recorded during the survey (Table 23.6a-i).

3.3 Species of Conservation importance: One Threatened species of bird and one fish were observed during the survey (Table 23.6a-i).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Prosopis juliflora*, *Lantana camara* and *Ipomoea aquatica.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Fishing is not undertaken as the wetland is dry.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the Sothuparai Dam at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the agriculture lands.
4.3 Fishery is undertaken for commercial purpose seasonally.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is no significant runoff form the surrounding area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does not support local fish species, as the wetland is seasonally dry.
4.15 There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken seasonally.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of water.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Soil mining needs to be regulated and monitored.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Periyakulam Kanmai

No published literature is available on the wetland.

Table 23.5: List of plants species recorded along the Periyakulam Kanmai

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Nymphaea odorata* | Meghalaya Red Water Lily | | Nymphaeaceae | Native | LC |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 9 | *Bauhinia purpurea* | Purple orchid tree | Nilattiruvatti | Fabaceae | Native | LC |
| 10 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 11 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 12 | *Neptunia oleracea* | Water mimosa, Garden puff | Sundaikkirai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 15 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 16 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 17 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 18 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 21 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 22 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 23 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 24 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 25 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 26 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 27 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 28 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 29 | *Phyllanthus maderaspatensis* | Madras Leaf flower | Nilanelli | Phyllanthaceae | Native | NA |
| 30 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 31 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 32 | *Hydrilla verticillata* | Water Thyme, hydrilla | amiranappaci, cikavalakam, cimpaka | Hydrocharitaceae | Native | LC |
| 33 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 34 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 35 | *Chrysopogon zizanioides* | | Vettiver,vettivera | Poaceae | Native | NA |
| 36 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 37 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 38 | *Azolla caroliniana* | Mosquito fern,Water velvet | | Salviniaceae | Introduced | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 23.6a: List of Insects species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 7 | Pharaoh Ant | *Monomorium pharaonis* | Formicidae |
| 8 | Spider Wasp | *Pompilidae sp.* | Pompilidae |
| 9 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 23.6b: List of Butterfly species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 6 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 23.6c: List of Odonata species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 4 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 5 | Trumpet Tail | *Acisoma panorpoides* | Libellulidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 8 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 9 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 10 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 11 | Yellow-Tailed Ashy Skimmer | *Potamarcha congener* | Libellulidae | Common |
| 12 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 13 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |

Table 23.6d: List of Arachnida species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 23.6e: List of Fish species recorded form the Periyakulam

| S. No | ***Scientific Name*** | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 2 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 3 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 4 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 5 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 6 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 7 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 8 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 23.6f: List of Amphibian species recorded form the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Bull Forg | *Hoplobatrachus tigerinus* | Dicroglossidae | Least Concern |
| 2 | Indian Pond Forg | *Euphlyctis hexadactylus* | Dicroglossidae | Least Concern |

Table 23.6g: List of Reptile species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 23.6h: List of Bird species recorded along the Periyakulam Kanmai

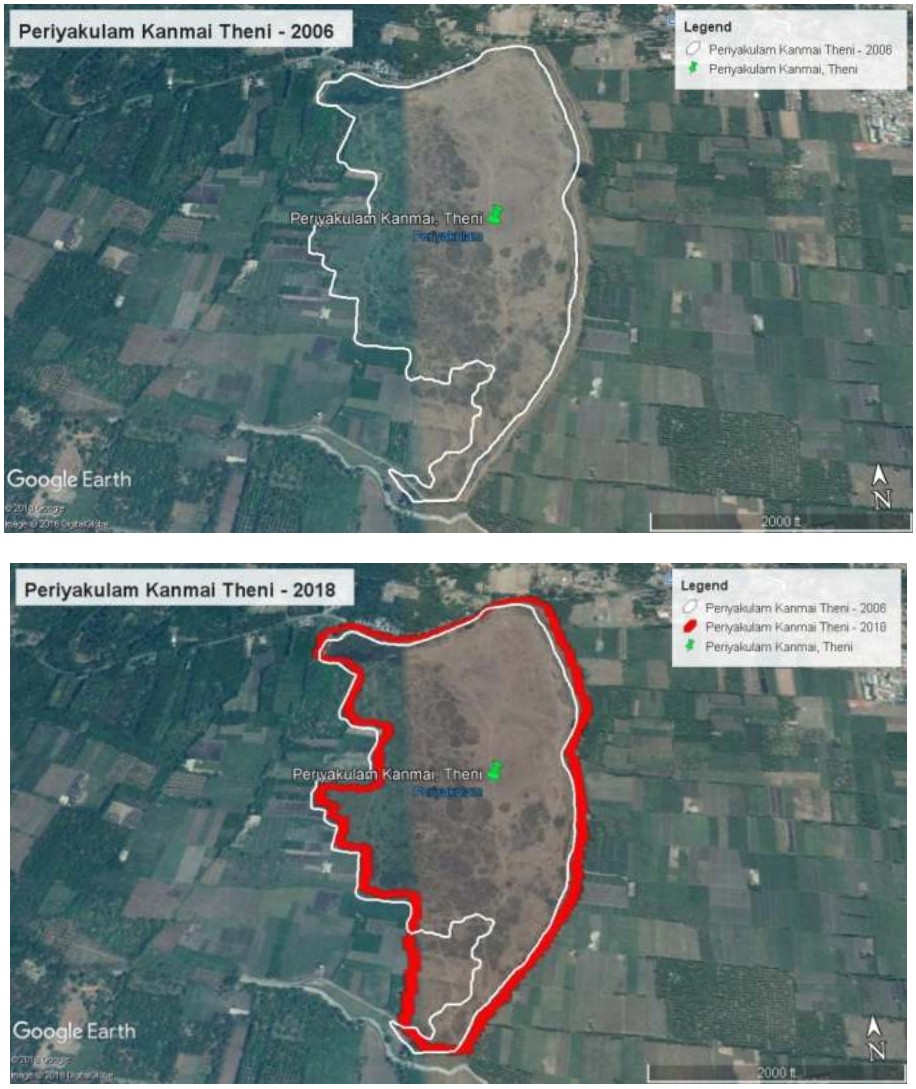
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 3 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 6 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 7 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 8 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 9 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 10 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 11 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 14 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 15 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 16 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

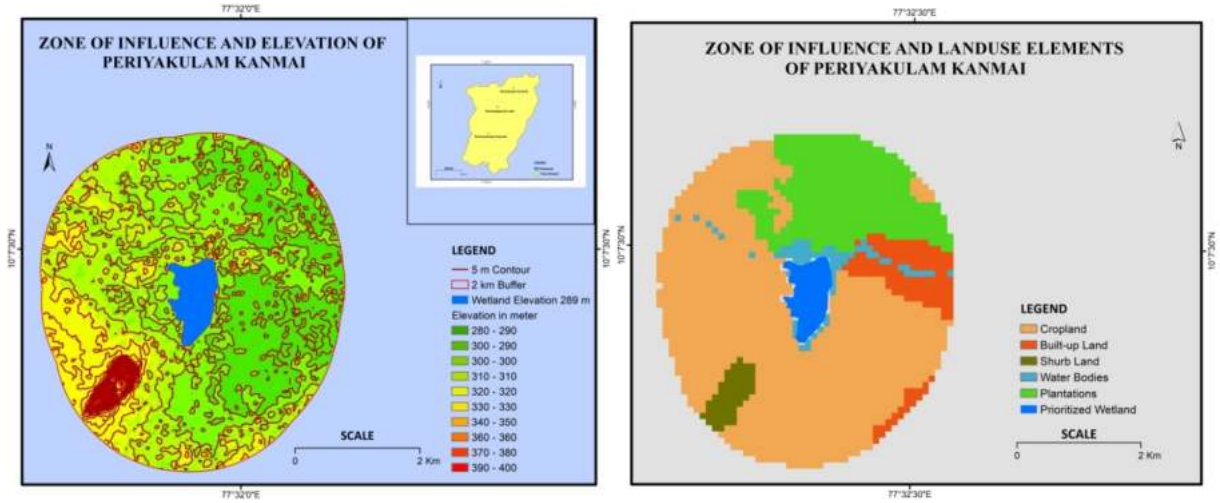
Table 23.6i: List of Mammal species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |

**Map 23.4: Comparative Google imagery for Periyakulam Kanmai**




**Map 23.5: Zone of Influence around the Periyakulam Kanmai**



**Thamaraikulam Kanmai**

**Lake Survey Number:** 218

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Thamarai kulam Lake (Plate 53), also called as Ramasami Naiken lake.

1.2 Villages that surround the wetland include Vaikapatty, Ramasamyanaicken patty and Gokilapuram.

1.3 & 1.4 The lake is based in Uthamapalayam taluka in Theni district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 48'04.6" N; 09° 48'07.5" N; 09° 48'09.1" N; 09° 48'08.6" N; 09° 48'09.3" N; and Longitude: 077° 20'46.3" E; 077° 20'52.1" E; 077° 20'58.7" E; 077° 21'07.2" E; 077° 21'16.4" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 59.7 hectares (Map 23.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermitent tank.

2.3 Based on the secondary information the average depth is 1.5to 2 5 meters for the wetland.

2.4 The elevation of the wetland is 377 to 380 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area. It receives water form Mullaperiyar River canal overflow feeds Vaigai River.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the agricultural lands around the wetland.
d) The pH of the water was form 7.4 to 7.8.
e) The lake has fresh water the salinity recorded was 0.043 ppt.
f) The wetland is mesotrophic and had *Ipomoea sp.* that dominated the landscape i.e 70%.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Theni was 22.8 mm.
b) The atmospheric temperature varied between 27.8 and 30.5°C and the humidity was form 60 to 66%.

2.7 The area of zone of influence is 1959.63 hectares with a fixed buffer area of 2 kms around the wetland (Map 23.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 80%; | Settlements (rural) 20%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2012 and 2018 is given in Map 23.6 & 23.7.

**Section III- Biodiversity**

3.1 List of Plant species: 55 species of plants were recorded around the wetland during our visit (Table 23.7).

3.2 List of animal species: 60 animal species including Four domestic species were recorded during the survey (Table 23.8a-g).

3.3 Species of Conservation importance: Three Threatened species of birds and one fish specie were observed during the survey (Table 23.8a-g).

3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plants including *Prosopis juliflora*, *Lantana camara* and *Ipomoea aquatica.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Fishing is undertaken as seeds are introduced by the PWD.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for drinking purpose. The municipal corporation provides drinking water form the Mullaperiyar River at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The overflow water feeds the agriculture lands and Vaigai River.

4.3 Fishery is undertaken for commercial purpose and recreational purpose.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is no significant runoff form the surrounding area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site adjoining the wetland is majorly used by the locals for different activities as well as toilets.

4.12 There are no agriculture or plantation activities within the wetland. If the water is low cucurbita is cultivated by the locals.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland does support local fish species.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken seasonally.

5.2 There is no agriculture undertaken within the wetland.

5.3 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure.

6.3 The wetland water quality and the ecological character is changing rapidly due to lack of water.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Sewage mixing into the lake needs to be regulated and monitored

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Thamaraikulam Kanmai.

No published literature is available on the wetland.

Table 23.7: List of plant species recorded along the Thamaraikulam Kanmai

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 6 | *Malvastrum coromandelianum subsp. c oromandelianum* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 7 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 8 | *Sida rhombifolia* | Cuban jute, Jelly leaf, Queensland hemp | Kurundotti | Malvaceae | Native | |
| 9 | *Muntingia calabura* | Jamaica Cherry | Thenpazham | Muntingiaceae | Exotic | NA |
| 10 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 11 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 12 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 13 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 14 | *Mangifera indica* | Mango | Ma | Anacardiaceae | Native | DD |
| 15 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 16 | *Delonix elata* | White Gulmohar, White Poincian | Perungondrai, Vadanarayanan | Fabaceae | Native | LC |
| 17 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 18 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 19 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 20 | *Senna tora* | Stinking Cassia, Chinese senna, Foetid cassia,Java bean, Low senna,Peanut weed, Sicklepod | Senavu | Fabaceae | Native | NA |
| 21 | *Sesbania grandiflora* | Agati | Sevvagatti, muni | Fabaceae | Native | NA |
| 22 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 23 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 24 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 25 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 26 | *Corallocarpus epigaeus* | Red fruit creeper | | Cucurbitaceae | Native | NA |
| 27 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 28 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 29 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 30 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 31 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 32 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 33 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 34 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 35 | *Duranta erecta* | Sky flower, Golden Dew Drop, Pigeon Berry | | Verbenaceae | Introduced | |
| 36 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 37 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 38 | *Pisonia grandis* | Lettuce Tree | Nanju Murichchan | Nyctaginaceae | Native | NA |
| 39 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 40 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 41 | *Alternanthera philoxeroides* | Alligator Weed | | Amaranthaceae | Invasive | NA |
| 42 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 43 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 44 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 45 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 46 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 47 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 48 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 49 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 50 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 51 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 52 | *Cyperus rotundus* | Common nut sedge, coco grass, nutgrass, purple nutsedge | Korai, korai kilangu, muthakasu | Cyperaceae | Native | LC |
| 53 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 54 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 55 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 23.8a: List of Insect species recorded along the Thamaraikulam Kanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Grasshopper 1 | *Diabolocatantops pinguis* | Acrididae |
| 3 | Grasshopper 2 | *Spathosternum prasiniferum* | Acrididae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 6 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 7 | Transverse lady beetle | *Coccinella transversalis* | Coccinellidae |
| 8 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 9 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 10 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 11 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 12 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 13 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 14 | Pharaoh Ant | *Monomorium pharaonis* | Formicidae |
| 15 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 23.8b: List of Butterfly species recorded along the Thamaraikulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 2 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 5 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Black Rajah | *Charaxes solon* | Morphinae | Uncommon |
| 8 | Dark Evening Brown | *Melanitis phedima varaha* | Satyrinae | Uncommon |

Table 23.8c: List of Odonata species recorded along the Thamaraikulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 4 | Yellow-Tailed Ashy Skimmer | *Potamarcha congener* | Libellulidae | Common |

Table 23.8d: List of Fish species recorded form the Thamaraikulam Kanmai

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 23.8e: List of Reptile species recorded along the Thamaraikulam Kanmai

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

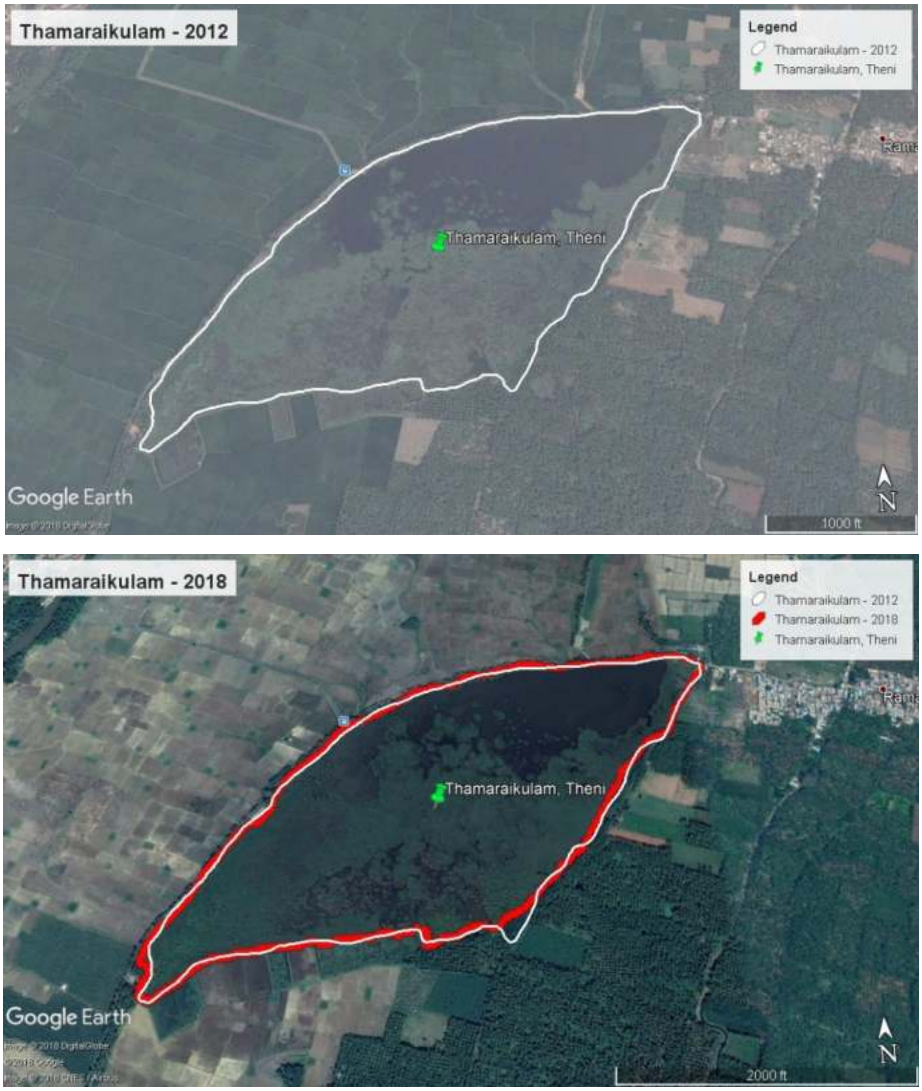
Table 23.8f: List of Bird species recorded along the Thamaraikulam Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 4 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 11 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 12 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 13 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 14 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 15 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 16 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 17 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 18 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

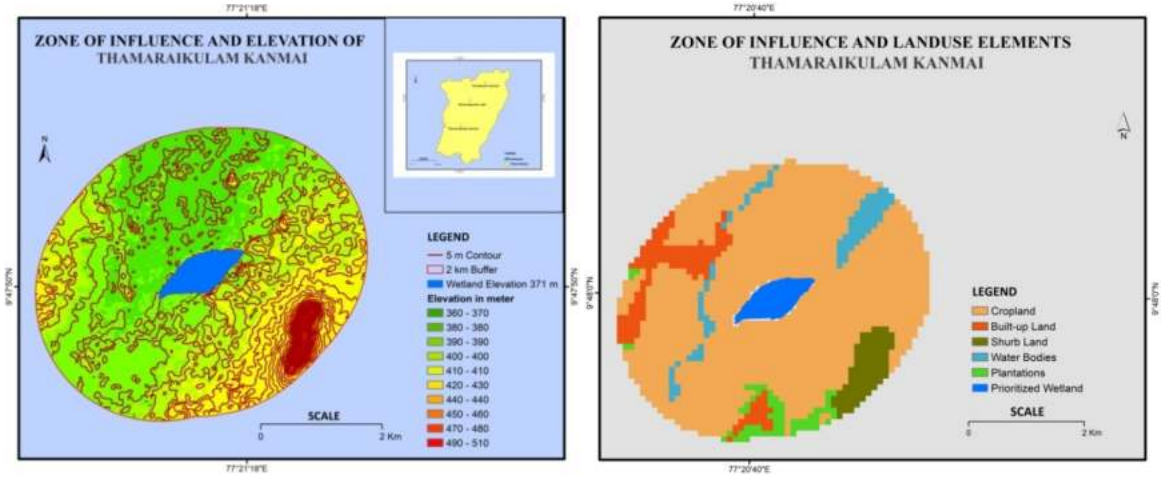
Table 23.8g: List of Mammal species recorded along the Thamaraikulam Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |

**Map 23.6: Comparative Google images for Thamaraikulam Kanmai**




**Map23.7: Zone of Influence around the Thamaraikulam Kanmai**



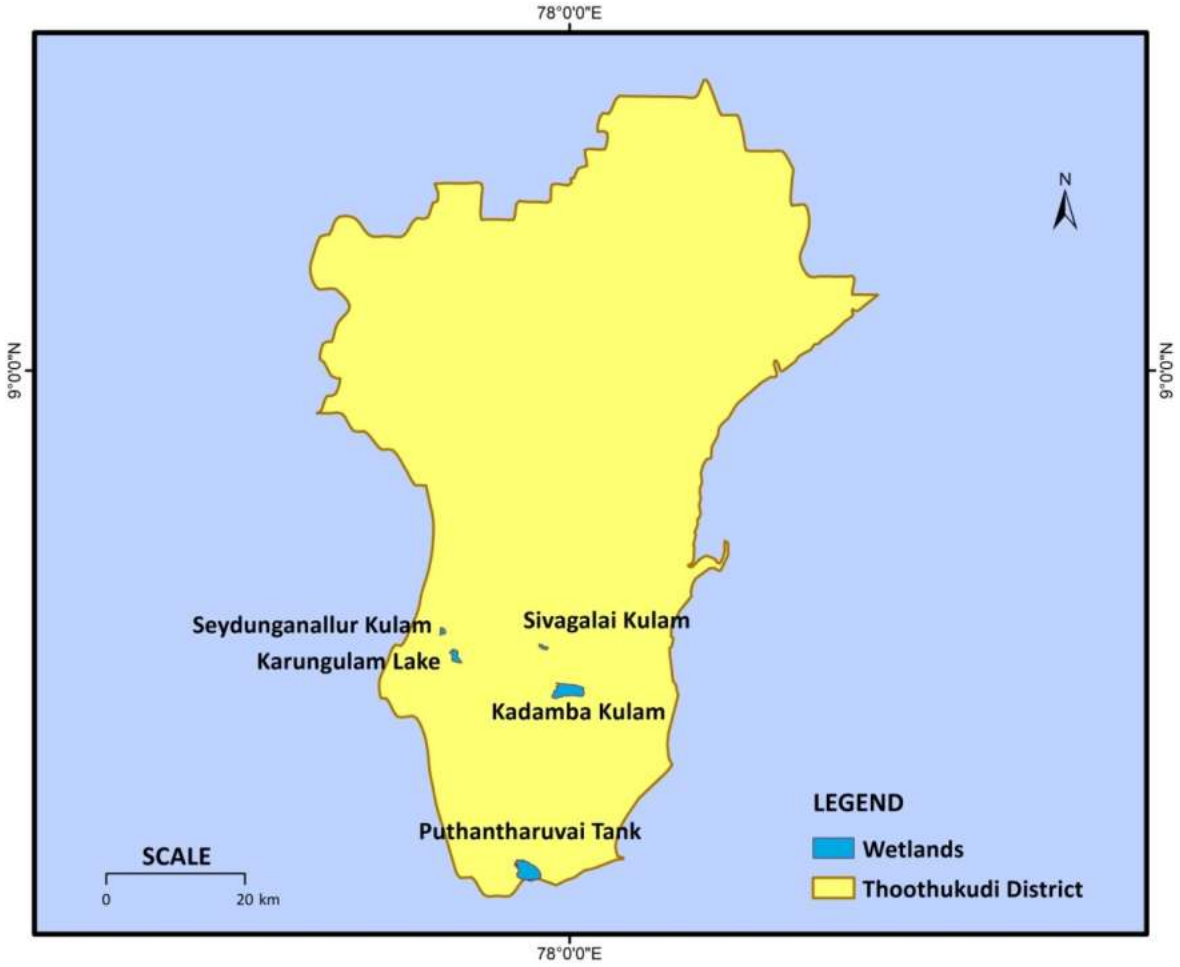
## 24. Thoothukudi District

### 1. Introduction

The district of Thoothukudi is situated in the extreme south-eastern corner of Tamil Nadu state. It is bounded on the north by the districts of Tirunelveli, Virudhunagar and Ramanathapuram, on the east and south-east by Gulf of Mannar and on the west and south-west by the district of Tirunelveli. Thoothukudi District, also known as Tuticorin District was formed by dividing Tirunelveli district in 1986. It was formerly ruled by one of the oldest kingdoms in India, the Pandyan Dynasty with the port of Korkai through which trade with Rome happened. Thoothukudi is a seaport, which serves southern Tamil Nadu including the inland cities of Coimbatore, Madurai and Tirunelveli.

Total geographic area of Thoothukudi is 4621 km². Total area under wetland is 37810 ha, which includes 576 small wetland (<2.25 ha). Lakes/Ponds occupy 28.07% of wetland area. The second major wetland type is Salt pans (6635 ha). The other wetland types Tanks/ponds, Rivers/stream, Salt marsh and Aquaculture ponds.

SACON during 2004 had prioritized two wetlands form Thoothukudi district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these two wetlands to assess its present potential for conservation. (Map24.1). In addition, one more wetland was selected based on the bird diversity reports.




**Map24.1: Wetlands of Thoothukudi district assessed for Prioritization**

**Observations**

Of the five wetlands selected in the district, Puthantharuvai Tank is the largest while Sivagalai Kulam is the smaller of the five wetlands. Around the wetlands, we recorded 113 plant species both aquatic and terrestrial including 17 invasive species (Table 24.1). The faunal components totaled 145 species with the representation of 61 bird species including the wetland birds. The field study revealed that Puthantharuvai Tankwas dry wetland is show hydric soil, Sivagalai Kulam was Oligotrophic while the remaining three were Mesotrophic in status (Table 24.2).

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Karangulam wetland. Mining of lake sediments was a major threat to the dry wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Puthantharuvai Tank
2. Sivagalai kulum
3. Kadamba kulam
4. Seydunganallur kulam
5. Karungulam lake

Table 24.1: The flora and fauna recorded form the wetlands of Thoothukudi District

| S. No | Name of the Wetland | Plants (Invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Seydunganallur kulam | 46(7) | 14 | 10 | 21 | 2 | 11 | 0 | 1 | 32 | 4 |
| 2 | Sivagalai kulam | 34(9) | 6 | 5 | 13 | 1 | 12 | 0 | 1 | 37 | 3 |
| 3 | Karungulam lake | 54(11) | 8 | 11 | 25 | 2 | 11 | 0 | 1 | 35 | 4 |
| 4 | Puthantharuvai Tank | 14(4) | 2 | 2 | 4 | 0 | 0 | 0 | 1 | 8 | 3 |
| 5 | Kadamba kulam | 45(10) | 6 | 9 | 10 | 1 | 5 | 0 | 2 | 36 | 2 |
| | Total | 113(17) | 18 | 15 | 28 | 2 | 15 | 0 | 2 | 61 | 4 |

Table 24.2: The water and soil quality assessed form the wetlands of Thoothukudi District

| **District Name** | Thoothukudi | | | | |
|---|---|---|---|---|---|
| **Wetland Name** | Kadamba Kulam | Karungulam Lake | Seydunganallur Kulam | Sivagalai Kulam | Puthantharuvai Tank |
| **Wetland area (ha)** | 706 | 181 | 63.1 | 59.6 | 769 |
| **Buffer Area in Hectare (ha)** | 3717.85 | 2483.41 | 1916.05 | 1961.12 | 3518.27 |
| **Air Temperature °C** | 35.5 | 30.1 | 28.2 | 27.5 | 38 |
| **Water Temperature °C** | 30.2 | 29.5 | 27.8 | 27.5 | |
| **Humidity %** | 55 | 64 | 68 | 80 | 48 |
| **Nutrients in Water** | Mesotrophic | Mesotrophic | Mesotrophic | Oligotrophic | not known |
| **Water pH** | 8.3 | 8 | 7.4 | 7.5 | |
| **Water TDS ppm** | 155 | 95 | 126 | 98 | |
| **Water Conductivity ppm** | 219 | 1000 | 247 | 254 | |
| **Light Penetration cms** | 76 | 69 | 70 | 85 | |
| **Water Salinity ppt** | 0.107 | 0.138 | 0.174 | 0.102 | |
| **DO mg/L** | 6.10 | 13.41 | 9.76 | 11.38 | |
| **PO4P mg/L** | 0.083 | 0.040 | 0.030 | 0.134 | |
| **Water Na ppm** | 956 | 76 | 28.15 | 14.5 | |
| **Water K ppm** | 3.7 | 28.15 | 5.4 | 2.5 | |
| **Water Li ppm** | 0.4 | 0.2 | 0.1 | 0 | |
| **Water Ca ppm** | 104.1 | 1065 | 31.5 | 11.9 | |
| **Soil Colour code** | 7.5YR 2.5/2 | 10YR 3/1 | 10YR 5/6 | 10YR 5/6 | 5Y 6/1 |
| **Soil Colour** | Very Dark Brown | Very Dark Gray | Yellowish Brown | Yellowish Brown | Gray |
| **Soil pH** | 6.45 | 4.45 | 7.25 | 6.51 | 7.96 |
| **Soil TDS ppm** | 359 | 1.25 | 78.7 | 77.3 | 700 |
| **Soil Conductivity ppm** | 506 | 1774 | 110.8 | 108.7 | 987 |
| **Soil Salinity ppt** | 0.244 | 0.895 | 0.056 | 0.054 | 0.485 |
| **Soil Na ppm** | 4.1 | 10.5 | 5 | 3 | 61.9 |
| **Soil K ppm** | 8.2 | 35.5 | 4.2 | 3.6 | 31.7 |
| **Soil Li ppm** | 0.1 | 0.5 | 0 | 0 | 0.4 |
| **Soil Ca ppm** | 33.4 | 109.6 | 7.5 | 5.1 | 63.4 |

**Kadamba Kulam**

**Lake Survey Number**: 1104

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kadambakulam (Plate 54).

1.2 Villages that surround the wetland include Mookuperi, Melakadambai

1.3 & 1.4 The lake is based in Tirchendur taluka in Toothukudi District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 35'17.6" N; 08° 35'26.6" N; 08° 35'30.3" N; 08° 35'37.0" N; 08° 35'23.7" N; and Longitude: 078° 01'04.2" E; 078° 00'42.8" E; 078° 00'37.8" E; 077° 59'28.0" E; ; 077° 59'52.7" E ; 077° 00'52.5" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Toothukudi division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 706 hectares (Map 24.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Permanent lake.

2.3 Based on the secondary information the average depth is 4 to 5.5 meters for the wetland.

2.4 The elevation of the wetland is 16 to 20 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Tambraparani River.
b) The water in the wetland is mostly of intermittent nature with extreme occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in the replenishing the groundwater.
d) The pH of the water was form 7.4 to 8.9.
e) The lake has fresh water with the salinity was 107 ppt.
f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of January in Toothukudi was 1.7 mm.
b) The atmospheric temperature varied between 30.2 and 35.1°C and the humidity was form54 to 55%.

2.7 The area of zone of influence is 3717.85 hectares with a fixed buffer area of 2 kms around the wetland (Map 24.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 0 %; |
| Agriculture 95%; | Settlements (rural) 5%; |
| Settlements (Urban) 0% ; | Industrial 0% |

2.9 The comparison of the wetland for the years 2007 and 2018 is given in Map 24.2 & 24.3.

**Section III- Biodiversity**

3.1 List of Plant species: 45 species of plants were recorded around the wetland during our visit (Table 24.3).

3.2 List of animal species: 71 animal species including 1 domestic species were recorded during the survey (Table 24.4a-h).

3.3 Species of Conservation importance: One Threatened species of bird was observed during the survey (Table 24.4a-h).

3.4 Major Plant invasive alien species and extent of invasion: 10 invasive plants including *Eichornia crassipes, Ipomoea sp*., *Prosopis juliflora*, formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for drinking purpose.
4.2 Agriculture is undertaken around the wetland and the ground water is used for irrigation.
4.3 Fishery is undertaken with permission form PWD in the lake, recreational fishery is also practiced.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 Recreational fishery activities are there when the water is available.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 Recreation and cultural activity is organized around the wetland.
4.11 The site is only Majorly used by farmers for plantations and agriculture.
4.12 There is no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the very few local bird species during our survey.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture.
5.6 The wetland is used for bathing by livestock and man.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is no organized fishing activity.
6.3 There are invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Growth of invasive species has to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Kadamba kulam.

Table24.3: List of Plant species recorded along the Kadamba Kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 6 | *Triumfetta rhomboidea* | Burr bush,chinese burr,Diamond burrbark,Parakeet bur | Kapotam,Ketakam | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 9 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 10 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 11 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Terminalia arjuna* | Arjun | Marudhu | Combretaceae | Native | NA |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 16 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 17 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 18 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 19 | *Trianthema portulacastrum* | Desert Horse Purslane | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 20 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 21 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 22 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 23 | *Catharanthus roseus* | Periwinkle, Madagascar periwinkle, Vinca | | Apocynaceae | Introduced | NA |
| 24 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 25 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 26 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 27 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 28 | *Utricularia vulgaris* | Greater Bladderwort | | Lentibulariaceae | Introduced | LC |
| 29 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 30 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 31 | *Vitex negundo* | Chaste Tree | Nocchi | Lamiaceae | Native | NA |
| 32 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 33 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 34 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 35 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 36 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 37 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 38 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 39 | *Ficus drupacea* | Mysore Fig, Brown Wolly Fig | Sonnaiala, Kalala | Moraceae | Native | NA |
| 40 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 41 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 42 | *Pistia stratiotes* | Water cabbage, Nile cabbage, | Agasatamarai, | Araceae | Native | LC |
| 43 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 44 | *Cyperus corymbosus* | Peri peri | | Cyperaceae | Native | NA |
| 45 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 24.4a: List of Insects species recorded along the Kadamba Kulam

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 24.4b: List of Butterfly species recorded along the Kadamba Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Continental Swift | *Parnara ganga* | Hesperiinae | Common |
| 2 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 6 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 7 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 9 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 10 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 24.4c: List of Odonate species recorded along the Kadamba Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 7 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 8 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |
| 9 | Greater Crimson Glidder | *Urothemis signata* | Libellulidae | Common |

Table 24.4d: List of Arachnid species recorded along the Kadamba Kulam

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 24.4e: List of Fish species recorded form the Kadamba Kulam

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 5 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 24.4f: List of Reptiles species recorded along the Kadamba Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 24.4g: List of Bird species recorded along the Kadamba Kulam

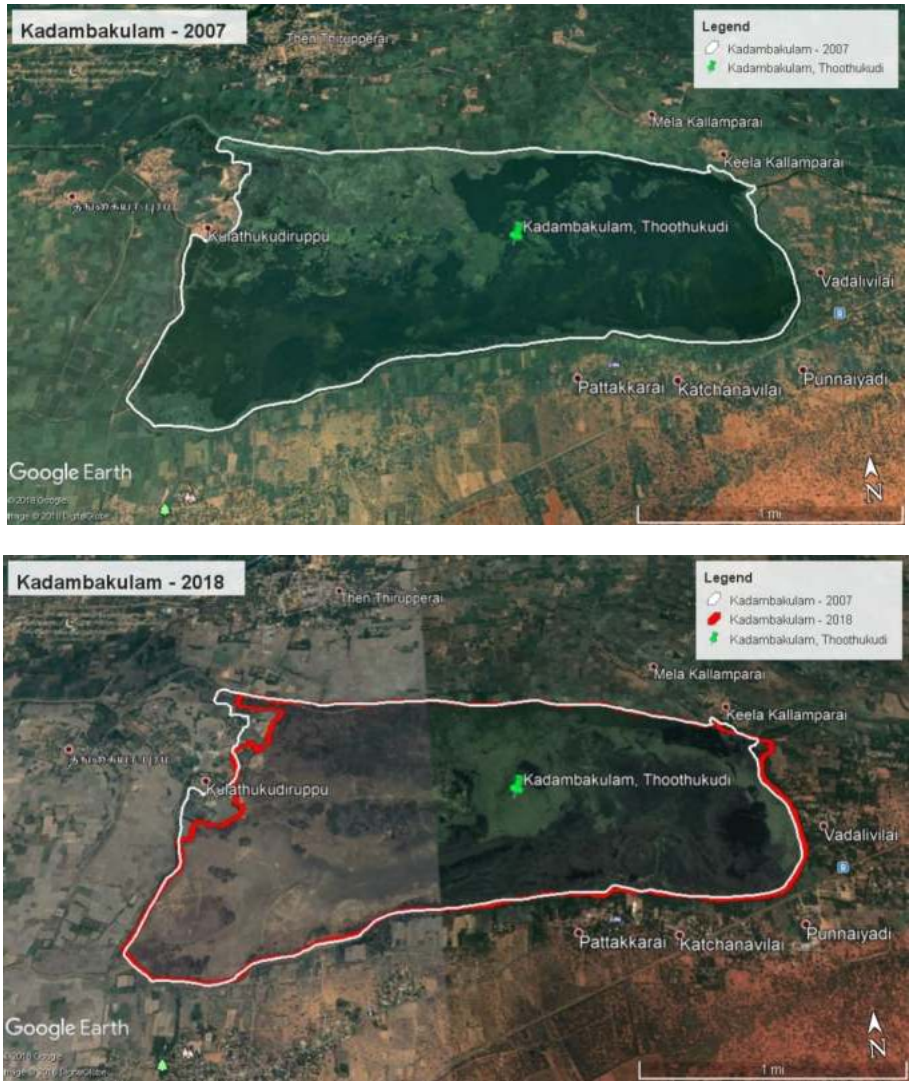
| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Knob-billed Duck | *Sarkidiornis melanotos* | Anatidae | Least Concern |
| 3 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 4 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 5 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 6 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 7 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 8 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 9 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 10 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 11 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 12 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 13 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 14 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 15 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 16 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 17 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 18 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 19 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 20 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 21 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 22 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 23 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 24 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 25 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 26 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 27 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 28 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 29 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 30 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 31 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 32 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 33 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 34 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 35 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 36 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |

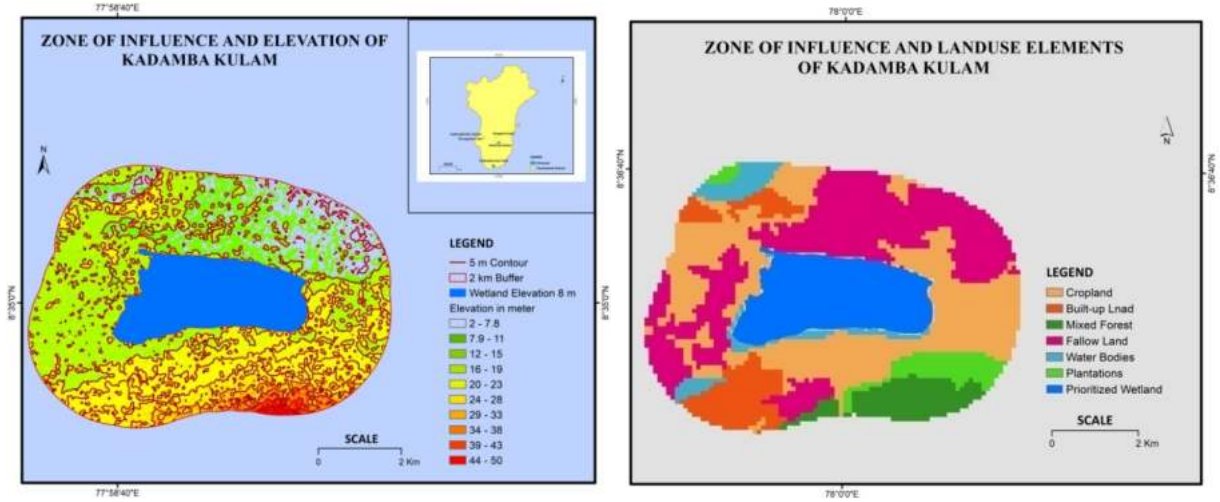
Table 24.4h: List of Mammal species recorded along the Kadamba Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 24.2: Comparative google imagery for Kadamba Kulam**




**Map 24.3: Zone of Influence around the Kadamba Kulam**



**Karungulam Lake**

Karunkulam is located in Karunkulam village. The water spread an area of 0.699 $km^2$ and the irrigation area is 593.43 acres. The water storage capacity is 66.21 cu.m.

**Lake Survey Number**: Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Karunkulam Lake, Marthandaesuurm Kulum (Plate 54).

1.2 Villages that surround the wetland include Karunkulam, Thatankulam, Kirakulam and Pulliyankulam.

1.3 & 1.4 The lake is based in Toothukudi District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 38'11.4" N; 08° 38'05.8" N; 08° 37'54.4" N; 08° 37'43.9" N; and Longitude: 077° 51'12.4" E; 077° 51'17.6" E; 077° 51'17.7" E; 077° 51'14.0" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Toothukudi division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 181 hectares (Map 24.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 3.0 meters for the wetland.

2.4 The elevation of the wetland is 26 to 32 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Tambraparani River and Maruthur River canal.

b) The water in the wetland is mostly of intermittent nature with extreme rare occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.

c) The water also helps in replenishing the groundwater.

d) The pH of the water was observed to be alkaline and recorded up to 7.8 to 8.0.

e) The lake has fresh water with the salinity recorded at 0.138 ppt at the time of sampling.

f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation. Moreover the wetland receives large quantities of sewage and effluents and is rich in nutrients the wetland has agriculture undertaken within the wetland.

2.6 Climatic setting

a) Rainfall for the month of January in Toothukudi was 1.7 mm.

b) The atmospheric temperature varied between 28.9 and 30.1°C and the humidity was form 62 to 64 %.

2.7 The area of zone of influence is 2483.41 hectares with a fixed buffer area of 2 kms around the wetland (Map 24.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/scrubland 10 %; |
| Agriculture 85%; | Settlements (rural) 5%; |
| Settlements (Urban) 5%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2004 and 2017 is given in Map 24.4 & 24.5.

**Section III- Biodiversity**

3.1 List of Plant species: 51 species of plants were recorded around the wetland during our visit ( Table 24.5).

3.2 List of animal species: 97 animal species including 3 domestic species were recorded during the survey (Table 24.6a-h).

3.3 Species of Conservation importance: Two near Threatened specie of fish were recorded during the survey (Table 24.6a-h).
3.4 Major Plant invasive alien species and extent of invasion: 11 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly 50% of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: *Tilapia* sp is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 Fishery is undertaken without any permission in the lake, recreational fishery is also practiced.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 Recreational fishery activities are in seen around the wetland.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has several temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.
4.11 The site is only majorly used by farmers for plantations.
4.12 There are agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a vast diversity of fishery although the commercial fishery is not undertaken.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture as the agriculture is practiced within the wetland.
5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 There is no organized fishing activity but some fish is cultured by few local families.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. The siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chanel should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Karungulam Lake


Abhisheka K., J.P. David M.B. Prashanth K.S. Seshadri and Ganesh T. (2013).First detailed survey of waterbirds in Tirunelveli and Tuticorin districts, Tamil Nadu, India. Journal of Threatened Taxa 5(12): 4641–4652; http://dx.doi.org/10.11609/JoTT.o3125.4641-52

Anni Prabakaran and Poorna B. (2012) Computational Complexity Analysis on Water Quality Index, *International Journal of Advanced Research in Computer Engineering & Technology*. 1(9): Pp. 95-102.

Clementking A. and Jothi Venkateswaran C. (2015) Prediction of Water Quality Attributes Variations Using Back Propagation Neural Network (BPNN) Model, *Proceedings of International Conference on Technology and Business Management*. Pp. 128-138.

Santhalakshmi A.S. (2014) Inventory of Riverine wetlands of tamiraparani in Tuticorin district. Ph.D. Thesis submitted to Manonmaniam Sundaranar University. Pp. 176.


Table 24.5: List of Plant species recorded along the Karungulam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 3 | *Capparis zeylanica* | Ceylon caper | Adondai, Konkani | Capparaceae | Native | NA |
| 4 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 5 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 11 | *Mangifera indica* | Mango | Ma | Anacardiaceae | Native | DD |
| 12 | *Albizia saman* | Rain Tree | Thoongumoonji maram | Fabaceae | Exotic | NA |
| 13 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 14 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 15 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 16 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 17 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 18 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 19 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 20 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 21 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 22 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 23 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 24 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 26 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 27 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 28 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 29 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 30 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 31 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 32 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 33 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 34 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 35 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 36 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 37 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 38 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 39 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 40 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 41 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 42 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 43 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 44 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 45 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 46 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 47 | *Bothriochloa pertusa* | Pitted beard grass | | Poaceae | Native | NA |
| 48 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 49 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 50 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 51 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 24.6a: List of Insects recorded along the Karungulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Colour Grasshopper | *Neorthacris acuticeps* | Pyrgomorphidae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 24.6b: List of Butterflies recorded along the Karungulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 5 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 6 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 7 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 10 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 11 | Great Orange Tip | *Hebomoia glaucippe* | Pierinae | Common |
| 12 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 13 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 14 | Zebra Blue | *Leptotes plinius* | Polyommatinae | Common |
| 15 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 16 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |

| | | | | |
|---|---|---|---|---|
| 17 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 18 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 19 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 20 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 21 | Common Leopard | *Phalanta phalantha* | Heliconiinae | Common |
| 22 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 23 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 24 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 25 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 24.6c: List of Dragonflies recorded along the Karungulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 7 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 8 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 9 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 10 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |
| 11 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |

Table 24.6d: List of Arachnida recorded along the Karungulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 24.6e: List of Fishes recorded form the Karungulam Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 24.6f: List of Reptile recorded along the Karungulam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 24.6g: List of Birds recorded along the Karungulam Lake

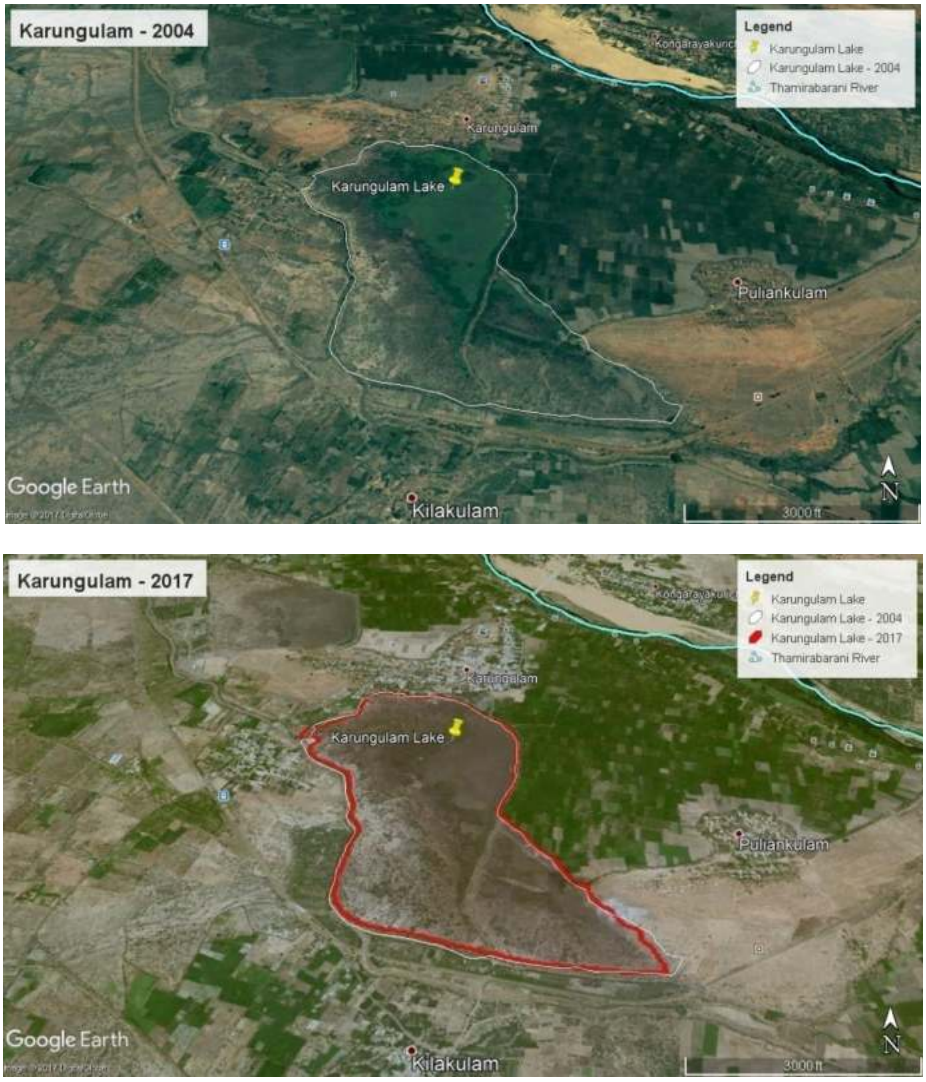
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 2 | Northern Pintail | *Anas acuta* | Anatidae | Least Concern |
| 3 | Garganey | *Anas querquedula* | Anatidae | Least Concern |
| 4 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 5 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 9 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 12 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 13 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 14 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 15 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 16 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 17 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 18 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 19 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 20 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 21 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 22 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 23 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 24 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 25 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 26 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 27 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 28 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 29 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 30 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 31 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 32 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 33 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 34 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 35 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

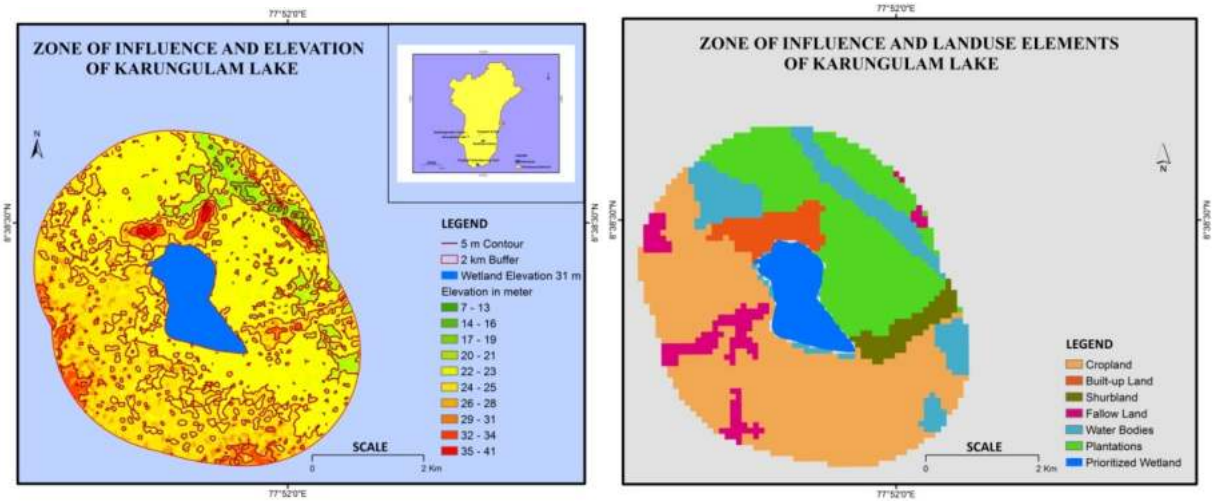
Table 24.6h: List of Mammals recorded along the Karungulam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 24.4: Comparative Google imagery for Karungulam Lake**




**Map 24.5: The zone of influence around the Karungulam Lake.**



**Puthantharuvai Tank**

**Lake Survey Number**: 197/1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Puthantharuvai tank also called as Periyatharuvai kanmai (Plate 55).

1.2 Villages that surround the wetland include Settivalai, Osathukudiiruppu, Kommudikotti, Thattanmadam.

1.3 & 1.4 The lake is based in Sathankulam taluka in Toothukudi District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 21'17.3" N; 08° 21'21.0" N; 08° 21'10.8" N; and Longitude: 077° 56'09.9" E; 077° 55'55.3" E; 077° 56'13.5" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Toothukudi division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 769 hectares (Map 24.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 5 to 10 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area and form the Manimuthuru River and Vijayanarayanam tank.

b) The water in the wetland is mostly of intermittent nature with extreme occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.

c) The water also helps in the replenishing the groundwater.

d) The pH of the water was not recorded as the wetland was dry at the time of our survey.

e) The lake has fresh water with the salinity was not recorded as the wetland was dry at the time of our survey.

f) The wetland was observed to be closer to Oligotrophic as the wetland was observed to have maximum dried floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of January in Toothukudi was 1.7 mm.

b) The atmospheric temperature was 38°C and the humidity was 40%

2.7 The area of zone of influence is 3518.27 hectares with a fixed buffer area of 2 kms around the wetland (Map 24.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 0 %; |
| Agriculture 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2009 and 2018 is given in Map 24.6 & 24.7.

**Section III- Biodiversity**

3.1 List of Plant species: 12 species of plants were recorded around the wetland during our visit (Table 24.7).

3.2 List of animal species: 20 animal species including 2 domestic species were recorded during the survey (Table 24.8a-f).

3.3 Species of Conservation importance: No Threatened species of birds and fish were observed during the survey (Table 24.8a-f).

3.4 Major Plant invasive alien species and extent of invasion: Four invasive plants including *Prosopis juliflora*, formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 Fishery is undertaken with permission form PWD in the lake, recreational fishery is also practiced.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 Recreational fishery activities are there when the water is available.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 Except for recreation no other cultural activity is organized around the wetland.
4.11 The site is only majorly used by farmers for plantations and agriculture.
4.12 There is no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the very few local bird species during our survey.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture.
5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is no organized fishing activity.
6.3 There are invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

No specific activities to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific Literature available for Puthantharuvai Kulam.

Godson Wisely Dass S. (Aug. 26, 2018) Thoothukudi battles drought even as Tamirabharani surplus drains into sea.(newindianexpress.com/states/tamil-nadu/2018/aug/26/thoothukudi-battles-drought-even-as-tamirabharani surplus-drains-into-sea-1862840.html)

Table 24.7: List of Plant species recorded along the Puthantharuvai Tank

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 2 | *Senna tora* | Stinking Cassia, Chinese senna | Senavu | Fabaceae | Native | NA |
| 3 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 4 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 5 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 6 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 7 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 8 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 9 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 10 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 11 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 12 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table24.8a: List of Insects species recorded along the Puthantharuvai Tank

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 2 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table24.8b: List of Butterfly species recorded along the Puthantharuvai Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table24.8c: List of Odonata species recorded along the Puthantharuvai Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table24.8d: List of Reptile species recorded along the Puthantharuvai Tank

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

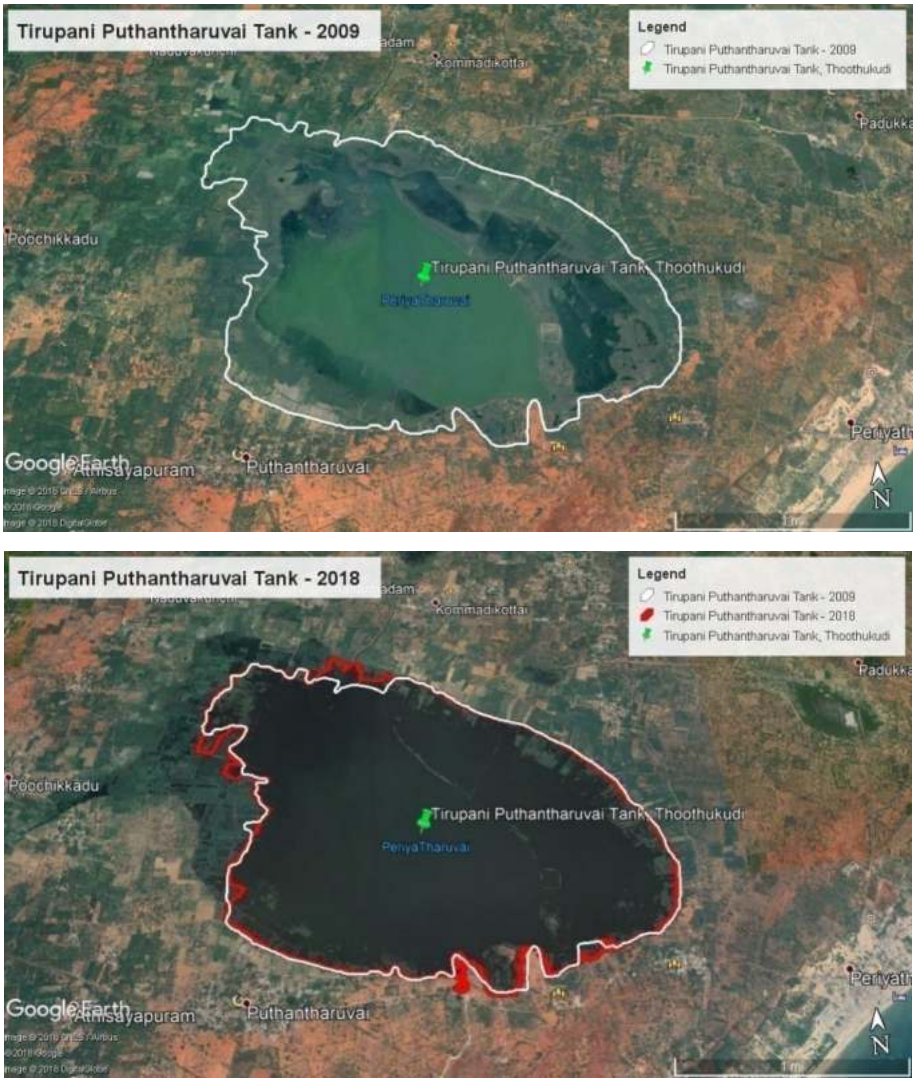
Table24.8e: List of Bird species recorded along the Puthantharuvai Tank

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 2 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 3 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 4 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 5 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 6 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 7 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 8 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

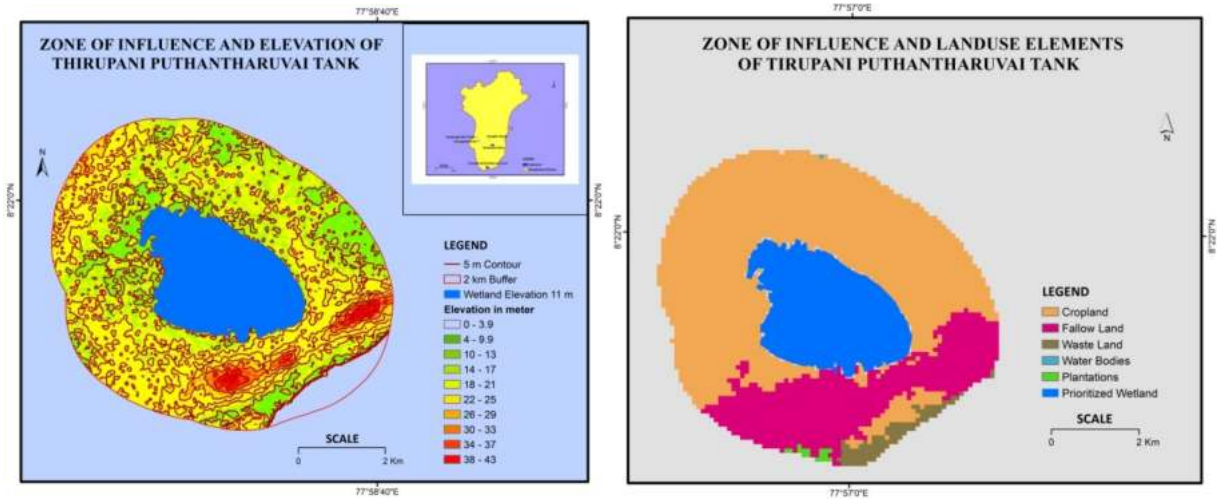
Table24.8f: List of Mammal species recorded along the Puthantharuvai Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 24.6: Comparative google imagery for Tirupani Puthantharuvai Tank**




**Map 24.7: Zone of influence around the Tirupani Puthantharuvai Tank**



**Seydunganallur Kulam**

Seydunganallur kulam is located in Seydunganallur village, under the taluk of Srivaikundam. Water supply is form regulated control form Marudur Anicut and the water comes form the Melakal canal. Water spread an area of 1.0402 km2 and the irrigation area is 335.02 acres. The water storage capacity is 21.18 cu.m.

**Lake Survey Number:** 830.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Seydunganallur kulam (Plate 55).

1.2 Villages that surround the wetland include Seydunganallur, Karaiyadiyur, Melathuthikuzhi, Keelathuthikuzhi, Santhankarapatty, Ayyanarkulampatty and Santhaiyadiyur.

1.3 & 1.4 The lake is based in Thoothukudi District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 38'25.3" N; 08° 38'26.4" N; 8° 39'28.2" N; 8° 39'33.5" N; and Longitude: 077° 49'52.8" E; 077° 49'59.2" E; 077° 50'07.8" E; 077° 50'20.3" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Thoothukudi division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 63.1 hectares (Map 24.8).

2.2 The Wetland type - the wetlands belong to the Man made (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 22 to 28 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and the influence of Tambraparani River.

b) The water in the wetland is intermitent nature with some water is present only for a few months, as the wetland is mostly dependant on the rainfall and runoff waters. .

c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds the adjoining Allankaluval cannel.

d) The pH of the water was 7.1 to 7.4.

e) The lake has fresh water as salinity was 0.174 ppt.

f) The vegetation like *Ipomoea, Eichornea crassipes, Prosopis juliflora, Parthenium* and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Toothukudi was 1.2 mm.

b) The atmospheric temperature varied between 27.5 and 28.2 °C and the humidity was 68%

2.7 The area of zone of influence is 1916.05 hectares with a fixed buffer area of 2 kms around the wetland(Map 24.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 10%; |
| Agricultural lands 70 %; | Settlements (Rural) 20%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2004 and 2017 is given in Map 24.8 & 24.9.

**Section III- Biodiversity**

3.1 List of Plant species: 43 species of plants were recorded around the wetland during our visit ( Table 24.9).

3.2 List of animal species: 95 animal species including 3 domestic species were recorded during the survey (Table 24.10a-i).
3.3 Species of Conservation importance: One Threatened bird species of and Two fish species were observed during the survey (Table 24.10a-i).
3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.*formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The municipal corporation and Panchayat provides drinking water form the borewell and Tambraparani water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The agriculture is undertaken around the wetland using borewell and Tambraparani water.
4.3 Fishery is not undertaken. Only recreational fishing is undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing through the wetland.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.
4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 There is agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture or fishery purpose.
5.6 The locals are well aware of the importance of the wetland with the presence of the civil society group that undertakes regular cleaning and awareness activities around the lake.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form solidwaste dumping changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for** Seydunganallur Kulam


Abhisheka K., J.P. David M.B. Prashanth K.S. Seshadri and Ganesh T. (2013).First detailed survey of waterbirds in Tirunelveli and Tuticorin districts, Tamil Nadu, India. Journal of Threatened Taxa 5(12): 4641–4652; http://dx.doi.org/10.11609/JoTT.o3125.4641-52

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Santhalakshmi A.S. (2014) Inventory of Riverine wetlands of tamiraparani in Tuticorin district. Ph.D. Thesis submitted to Manonmaniam Sundaranar University. Pp. 176.

Santhalakshmi A.S., Jeyakumaran Thampi P.S. and Arunachalam M. (2014) Species Composition, Relative abundance and Distribution of Bird Fauna of Riverine and Wetland habitats in lower reaches of Tamiraparani River, *International Journal of Research in Engineering and Bioscience*, 2(1) Pp. 49-63.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 24.9: List of Plant species recorded along the Seydunganallur Kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattu kasturi | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 5 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 6 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 7 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 8 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 9 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 10 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 11 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 12 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 13 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 16 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 17 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 18 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 19 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 20 | *Datura innoxia* | Datura | Vellammattai | Solanaceae | Invasive | NA |
| 21 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 22 | *Utricularia vulgaris* | Greater Bladderwort | | Lentibulariaceae | Introduced | LC |
| 23 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, Pulinagam | Martyniaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 24 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |
| 25 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 26 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 27 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 28 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 29 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 30 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 31 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 32 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 33 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 34 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 35 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 36 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 37 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 38 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 39 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kotti kizhangu | Aponogetonaceae | Native | LC |
| 40 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 41 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 42 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 43 | *Azolla caroliniana* | Mosquito fern,Water velvet | | Salviniaceae | Introduced | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 24.10a: List of Insects recorded along the Seydunganallur Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 6 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 7 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 8 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 9 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 10 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 11 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 12 | Orange Spider Wasp | *Cryptocheilus bicolor* | Pompilidae |
| 13 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 24.10b: List of Diplopoda recorded along the Seydunganallur Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 24.10c: List of Butterflies recorded along the Seydunganallur Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 5 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 6 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 7 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 10 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 11 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 12 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 13 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |

| | | | | |
|---|---|---|---|---|
| 14 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 15 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 16 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 17 | Common Leopard | *Phalanta phalantha* | Heliconiinae | Common |
| 18 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 19 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 20 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 21 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 24.10d: List of Dragonflies recorded along the Seydunganallur Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 2 | Blue Dart | *Pseudagrion microcephalum* | Coenagrionidae | Common |
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 7 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 8 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |
| 10 | Red Marsh Trotter | *Tramea Basilaris* | Libellulidae | Common |

Table 24.10e: List of Arachnida recorded along the Seydunganallur Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 24.10f: List of Fishes recorded form the Seydunganallur Kulam

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |

Table 24.10g: List of Reptile recorded along the Seydunganallur Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 24.10h: List of Birds recorded along the Seydunganallur Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 11 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 12 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 13 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 14 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 15 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 16 | Bronze-winged Jacana | *Metopidius indicus* | Jacanidae | Least Concern |
| 17 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 18 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 19 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 20 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 21 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 22 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 23 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 24 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 25 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 26 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 27 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 28 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 29 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 30 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 31 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 32 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

Table 24.10i: List of Mammals recorded along the Seydunganallur Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

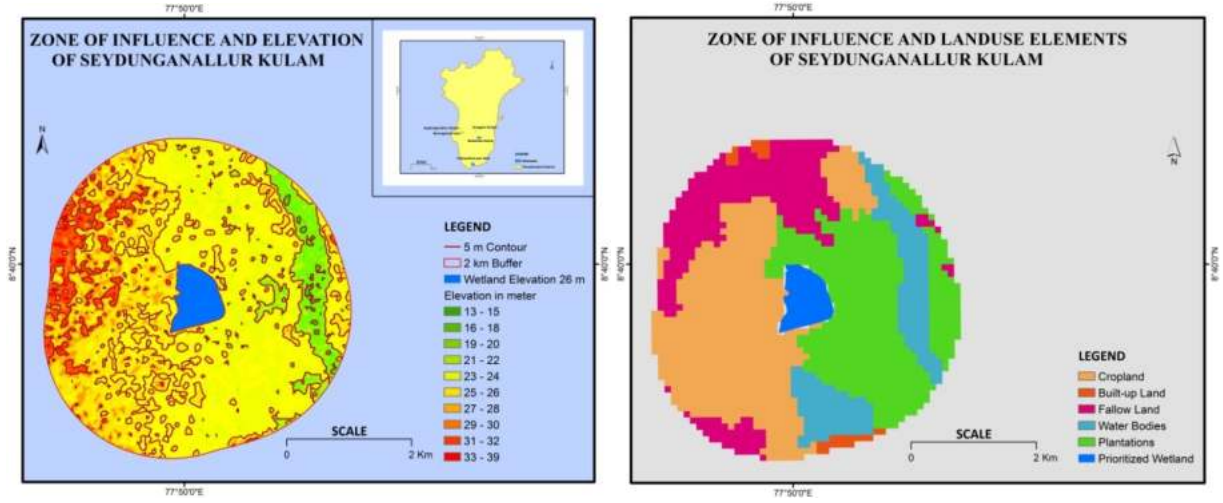
**Map 24.8: Comparative Google imagery for Seydunganallur Kulam**







**Map 24.9: The zone of influence around the Seydunganallur Kulam**



**Sivagalai Kulam**

Sivakalaikulam is located in Sivakalai village. The water spread an area is 0.856 km2 and the irrigation area is 188.44 acres. The water storage capacity is 24.17 cu.m.

**Lake Survey Number**: 28/1, 707/1 & 800/1

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Sivagalai lake (Plate 56).

1.2 Villages that surround the wetland include Sivagalai, Mangattapuram, Perunkulam, Vadmanngaran.

1.3 & 1.4 The lake is based in Toothukudi District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 38'23.9" N; 08° 38'24.4" N; 08° 38'34.2" N; 08° 38'40.3" N; and Longitude: 077° 58'31.9" E; 077° 58'19.0" E; 077° 57'37.2" E; 077° 57'36.8" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Toothukudi division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 59.6 hectares (Map 24.10).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 15 to 23 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Tambraparani River and Maruthur River canal.
b) The water in the wetland is mostly of intermittent nature with extreme rare occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in the replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded form 7.3 to 7.5.
e) The lake has fresh water with the salinity recorded at 0.102 ppt at the time of sampling.
f) The wetland was observed to be closer to Oligotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of January in Toothukudi was 1.7 mm.
b) The atmospheric temperature varied between 25.7 and 27.5°C and the humidity was form 76 to 80%.

2.7 The area of zone of influence is 1961.12 hectares with a fixed buffer area of 2 kms around the wetland (Map 24.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 10 %, |
| Agriculture 80% | Settlements (rural) 10% |
| Settlements (Urban) 0% | Industrial 0% |

2.9 The comparison of the wetland for the years 2007 and 2018 is given in Map 24.10 & 24.11.

**Section III- Biodiversity**

3.1 List of Plant species: 34 species of plants were recorded around the wetland during our visit ( Table 24.11).

3.2 List of animal species: 78 animal species including 2 domestic species were recorded during the survey (Table 24.12a-i).

3.3 Species of Conservation importance: Two near Threatened species of birds and fish were observed during the survey (Table 24.10a-i).
3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.
4.3 Fishery is undertaken without any permission in the lake, recreational fishery is also practiced.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 Recreational fishery activities are in seen around the wetland.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has several temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.
4.11 The site is only majorly used by farmers for plantations and agriculture.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a vast diversity of fishery although the commercial fishery is not practiced.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture.
5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 There is no organized fishing activity.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. The siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chanel should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Sivagalai Lake


Abhisheka K., J.P. David M.B. Prashanth K.S. Seshadri and Ganesh T. (2013).First detailed survey of waterbirds in Tirunelveli and Tuticorin districts, Tamil Nadu, India. Journal of Threatened Taxa 5(12): 4641–4652; http://dx.doi.org/10.11609/JoTT.o3125.4641-52

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas.Salim Ali Centre for Ornithology and Natural History. Coimbatore, India, 222.

Santhalakshmi A.S. (2014) Inventory of Riverine wetlands of tamiraparani in Tuticorin district. Ph.D. Thesis submitted to Manonmaniam Sundaranar University. Pp. 176.

Santhalakshmi A.S., Jeyakumaran Thampi P.S. and Arunachalam M. (2014) Species Composition, Relative abundance and Distribution of Bird Fauna of Riverine and Wetland habitats in lower reaches of Tamiraparani River, *International Journal of Research in Engineering and Bioscience*. 2(1): Page 49-63.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 24.11: List of Plant species recorded along the Sivagalai Kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 7 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 8 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 9 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 10 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 11 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 12 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 13 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 16 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 17 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 18 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 19 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 20 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 21 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 22 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 23 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 24 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 25 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 27 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 28 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 29 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 30 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 31 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 32 | *Eleusine indica* | Indian crowfoot grass, | Thippa ragi, Keveru | Poaceae | Native | LC |
| 33 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |
| 34 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 24.12a: List of Insects recorded along the Sivagalai Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 24.12b: List of Diplopoda recorded along the Sivagalai Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 24.12c: List of Butterflies recorded along the Sivagalai Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 8 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 9 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 10 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 11 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 12 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 13 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 24.12d: List of Dragonflies recorded along the Sivagalai Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 24.12e: List of Arachnida recorded along the Sivagalai Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 24.12f: List of Fishes recorded form the Sivagalai Kulam

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 10 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 24.12g: List of Reptile recorded along the Sivagalai Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 24.12h: List of Birds recorded along the Sivagalai Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 12 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 13 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 14 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 15 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 16 | Caspian Tern | *Hydroprogne caspia* | Laridae | Least Concern |
| 17 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 18 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 19 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 20 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 21 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 22 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 23 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 24 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 25 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 26 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 27 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 28 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 29 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 30 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 31 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 32 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 33 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 34 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 35 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 36 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 37 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 24.12i: List of Mammals recorded along the Sivagalai Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

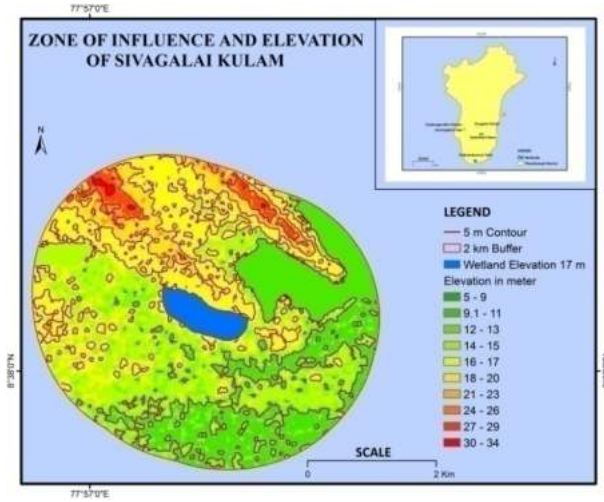
**Map 24.10: Comparative Google imagery for Sivagalai Kulam**

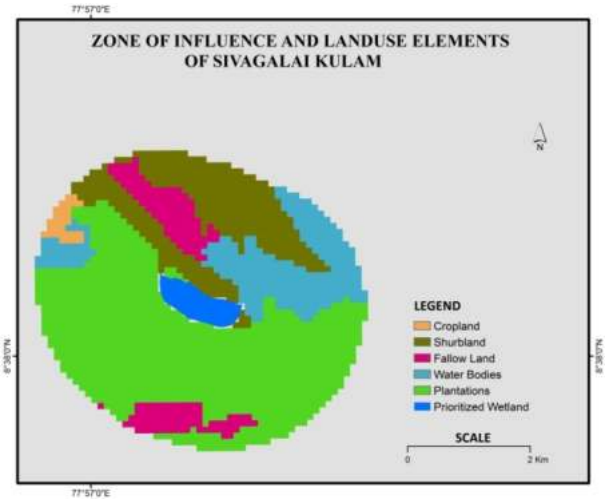






**Map 24.11: The zone of influence around the Sivagalai Kulam.**



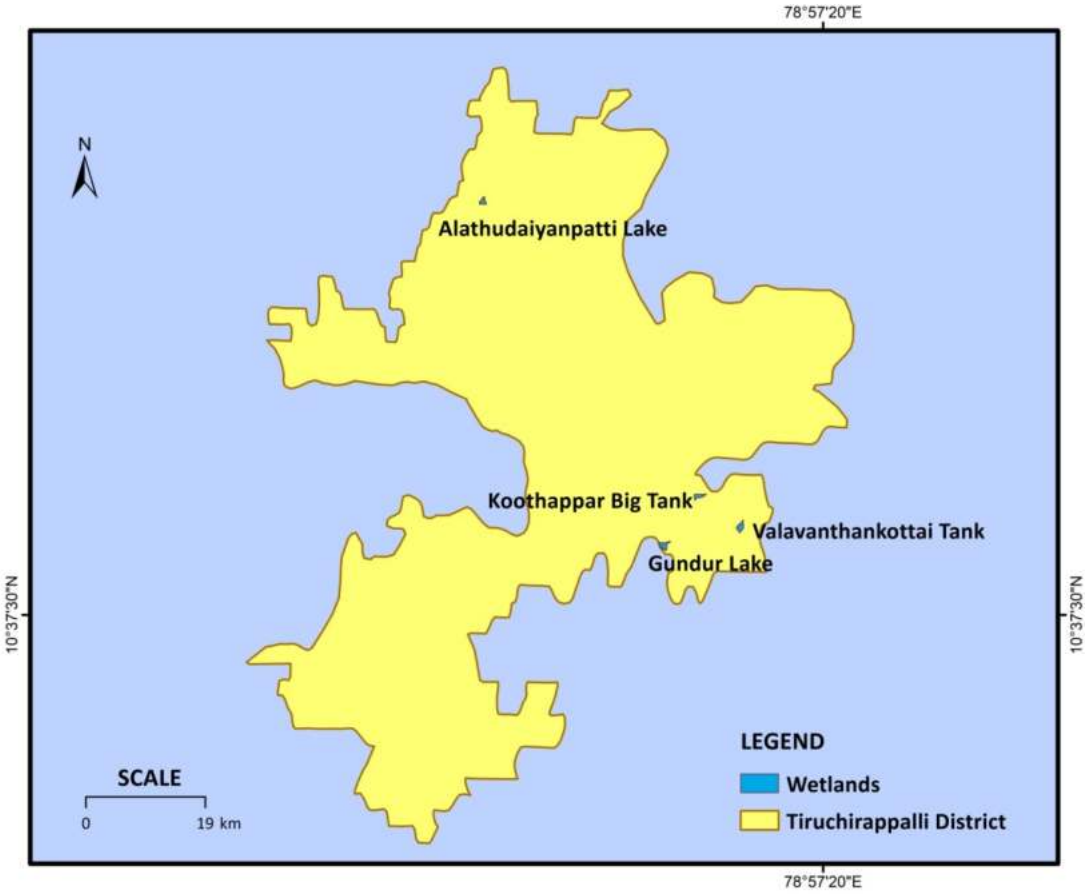
## 25. Tiruchirappalli District

### 1. Introduction

Tiruchirappalli District (also known as Tiruchchirapalli District) is located along the Kaveri River in Tamil Nadu state of India. The main town in Tiruchirappalli District is the city of Tiruchirappalli. It is bounded on the north by Salem District, on the northeast by Perambalur District, on the east by Thanjavur District, on the southeast by Pudukkottai District, on the south by Sivaganga and Madurai districts, on the southwest by Dindigul District, on the west by Karur District, and on the northwest by Namakkal District. The major Rivers are the River Kaveri and the River Kollidam.

Total geographic area of Tiruchirappalli is 4403.83 km². Total area under wetland is 18626 ha, which includes 790 small wetland (<2.25 ha). Tanks/Ponds occupy 28.96% of wetland area. The other wetland types are; River/Stream (7848 ha) and Lakes/ponds (4247 ha).

SACON during 2004 had prioritized two wetlands form Tiruchirappalli district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these two wetlands to assess its present potential for conservation. (Map 25.1).




**Map 25.1: Wetlands of Tiruchirappalli district assessed for Prioritization**

### Observations

Of the four wetlands selected in the district, Gundur Lake is the largest while Alathudayanpatti Lake is the smallest of the wetlands. Around the wetlands, we recorded 107 plant species both aquatic and terrestrial including 16

invasive species (Table 25.1). The faunal components totaled 104 species with the representation of 67 bird species including the wetland birds. The field study revealed that Koothapar big tank was Eutrophic with high levels of phosphorus while Gundur lake Mesotrophic, Alathudayanpatti Lake was oligotrophic in status (Table 25.2). The Valavanthankottai Tank was dry and the status was not known, however the soil was hydric in characteristic.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Koothapar wetland. Mining of lake sediments was a major threat to all the four wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Alathudaiyanpatti Lake
2. Valavanthankottai Tank
3. Gundur Lake
4. Koothappar big tank

Table 25.1: The flora and fauna recorded form the wetlands of Tiruchirappalli District

| S. No | Name of the Wetland | Plants (Invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Koothappar big tank | 66(11) | 8 | 10 | 28 | 2 | 10 | 0 | 2 | 41 | 5 |
| 2 | Gundur Lake | 50(10) | 11 | 9 | 10 | 2 | 11 | 2 | 2 | 45 | 4 |
| 3 | Alathudaiyanpatti Lake | 34(10) | 3 | 3 | 3 | 0 | 3 | 1 | 1 | 10 | 4 |
| 4 | Valavanthankottai Tank | 29(5) | 6 | 3 | 4 | 0 | 3 | 0 | 1 | 14 | 2 |
| | | 106(16) | 17 | 12 | 28 | 2 | 14 | 2 | 2 | 67 | 5 |

Table 25.2: The water and soil quality assessed form the wetlands of Tiruchirappalli District

| District Name | Tiruchirappalli | | | |
|---|---|---|---|---|
| **Wetland Name** | Alathudaiyanpatti Lake | Koothappar Big Tank | Gundur Lake | Valavanthankottai Tank |
| **Wetland area (ha)** | 79.6 | 97.4 | 128 | 123 |
| **Buffer Area in Hectare (ha)** | 2060.62 | 2290.28 | 2355.98 | 2270.23 |
| **Air Temperature °C** | 37.5 | 35 | 32.2 | 30 |
| **Water Temperature °C** | 36 | 32 | 28.5 | |
| **Humidity %** | 46 | 34 | 72 | 60 |
| **Nutrients in Water** | Oligotrophic | Eutrophic | Mesotrophic | not known |
| **Water pH** | 9.6 | 8.3 | 8.5 | |
| **Water TDS ppm** | 286 | 680 | 264 | |
| **Water Conductivity ppm** | 404 | 779 | 575 | |
| **Light Penetration cms** | 90 | 35 | 54 | |
| **Water Salinity ppt** | 0.196 | 0.461 | 0.245 | |
| **DO mg/L** | 10.16 | 15.24 | 4.27 | |
| **PO4P mg/L** | 0.130 | 0.148 | 0.010 | |
| **Water Na ppm** | 299.2 | 118.5 | 60.6 | |
| **Water K ppm** | 10.4 | 14.85 | 4 | |
| **Water Li ppm** | 0.3 | 0.2 | 0 | |
| **Water Ca ppm** | 93.9 | 47.5 | 25.65 | |
| **Soil Colour code** | 7.5YR 6/6 | 10YR 6/3 | 10YR 6/6 | 2.5Y 4/3 |
| **Soil Colour** | Reddish Yellow | Pale Brown | Brownish Yellow | Olive Brown |
| **Soil pH** | 7.96 | 7.72 | 8.03 | 7.92 |
| **Soil TDS ppm** | 269 | 289 | 189 | 1.06 |
| **Soil Conductivity ppm** | 379 | 407 | 250 | 1497 |
| **Soil Salinity ppt** | 0.182 | 0.196 | 0.127 | 0.75 |
| **Soil Na ppm** | 56.7 | 25.1 | 27.9 | 128.9 |
| **Soil K ppm** | 2.3 | 12.4 | 9.6 | 31.1 |
| **Soil Li ppm** | 0 | 0.1 | 0.1 | 0.3 |
| **Soil Ca ppm** | 20 | 26.5 | 16.3 | 80.7 |

**Alathudaiyanpatti Lake**

**Lake Survey Number**: 337 (2)

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Aladhudaiyanpaddi Chinna eri (Plate 57).

1.2 Villages that surround the wetland include Aladhudaiyanpaddi, Aallankuthu, Karuppampatti, S.N. Pudur.

1.3 & 1.4 The lake is based in Truyur taluka in Trichuripalli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11 12'45.8" N; 11° 12'51.4" N; 11° 12'56.5" N; 11° 12'58.8" N; and Longitude: 078° 28'24.9" E; 078° 28'18.3" N; 078° 28'21.4" E; 78° 28'20.7" N;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Trichuripalli division..

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 79.6 hectares (Map 25.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 2 meters for the wetland.

2.4 The elevation of the wetland is 172 to 176 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is puliyancholai River, Rainfall, the surrounding runoff form the catchment area.

b) The water in the wetland is mostly of intermittent nature lasting for six months with extreme rare occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.

c) The water also helps in the replenishing the groundwater.

d) The pH of the water was 9.6.

e) The lake has fresh water with the salinity as 196 ppt.

f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation. Moreover the wetland receives large quantities of sewage and effluents and is rich in nutrients the wetland has agriculture undertaken within the wetland.

2.6 Climatic setting

a) Rainfall for the month of February in Tiruchurappali was 0.1 mm.

b) The atmospheric temperature was 37.5°C and the humidity was 46 %

2.7 The area of zone of influence is 2060.62 hectares with a fixed buffer area of 2 kms around the wetland (Map 25.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%: | Grassland /Scrubland 0%; |
| Agriculture 70%; | Settlements (Rural) 30%; |
| Settlements (Urban) 0%; | Industrial 0%. |

2.9 The comparison of the wetland for the years 2011 and 2018 is given in Map 25.2 & 25.3.

**Section III- Biodiversity**

3.1 List of Plant species: 34 species of plants were recorded around the wetland during our visit (Table 25.3).

3.2 List of animal species: 28 animal species including 3 domestic species were recorded during the survey (Table 25.4a-h).

3.3 Species of Conservation importance: One near Threatened specie of fish was observed during the survey (Table 25.4a-h).

3.4 Major Plant invasive alien species and extent of invasion –Ten invasive plants including *Parthenium hysteropherous, Lantana camara, Eichornia crassipes, Prosopis juliflora*, and *Ipomoea sp.*formed nearly 70 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion – *Tilapia* sp is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around the wetland and ground water is used for irrigation.

4.3 Fishery is undertaken with permission form village panchayat and PWD in the lake, recreational fishery is also practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.7 It is a major source of ground water recharge.

4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.9 The wetland does have few temples and other religious institutions along its bank, cultural activity is organized around the wetland.

4.11 There are NO agriculture activities within the wetland but there is encroachment of land within the wetland.

4.12 The wetland provides a suitable habitat for birds as we recorded the terrestrial bird species during our survey.

4.13 The wetland supports a vast diversity of fishery although the commercial fishery is not very significant.

4.14 There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken but individuals fish in the lake based on the tenders.

5.2 There is agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture as the agriculture is practiced around the wetland.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.

6.3 There is no organized fishing activity but fish seeds are not released by the PWD.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chanel should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Siva T. (Jan 25, 2016) ebirdchecklist. (ebird.org/hotspot/L4052495?yr=all&m=)

Sudha R and Sangeetha T. (2017) Comparative study of water quality parameters of lake water (Chinna Eri) with surrounding bore well water samples, Thuraiyur (Tk), Tiruchirappalli (Dt), Tamil Nadu. *International Journal of Current Research in Chemistry and Pharmaceutical Sciences*. 4(7), 14-18

Table 25.3: List of Plant species recorded along the Alathudaiyanpatti Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 2 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 3 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 4 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 5 | *Bauhinia purpurea* | Purple orchid tree | Nilattiruvatti | Fabaceae | Native | LC |
| 6 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 7 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 8 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 9 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 10 | *Syzygium cumini* | Java plum | Naaval plum | Myrtaceae | Native | NA |
| 11 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 12 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 13 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 14 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 15 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 16 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 17 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 18 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 19 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 20 | *Tylophora indica* | Indian Ipecac, | kalutai-p-palai, | Apocynaceae | Native | |
| 21 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 22 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 23 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 24 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 25 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 26 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 27 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 28 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 29 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 30 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 31 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 32 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 33 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 34 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 25.4a: List of Insect species recorded along the Alathudaiyanpatti Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |

Table 25.4b: List of Butterfly species recorded along the Alathudaiyanpatti Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 2 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 25.4c: List of Odonata species recorded along the Alathudaiyanpatti Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 25.4d: List of Fish species recorded form the Alathudaiyanpatti Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category | IASI |
|---|---|---|---|---|---|---|
| 1 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC | |
| 2 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC | |
| 3 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC | |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 25.4e: List of Amphibian species recorded form the Alathudaiyanpatti Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Cricket Forg | *Fejervarya limnocharis* | Dicroglossidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 25.4f: List of Reptile species recorded along the Alathudaiyanpatti Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

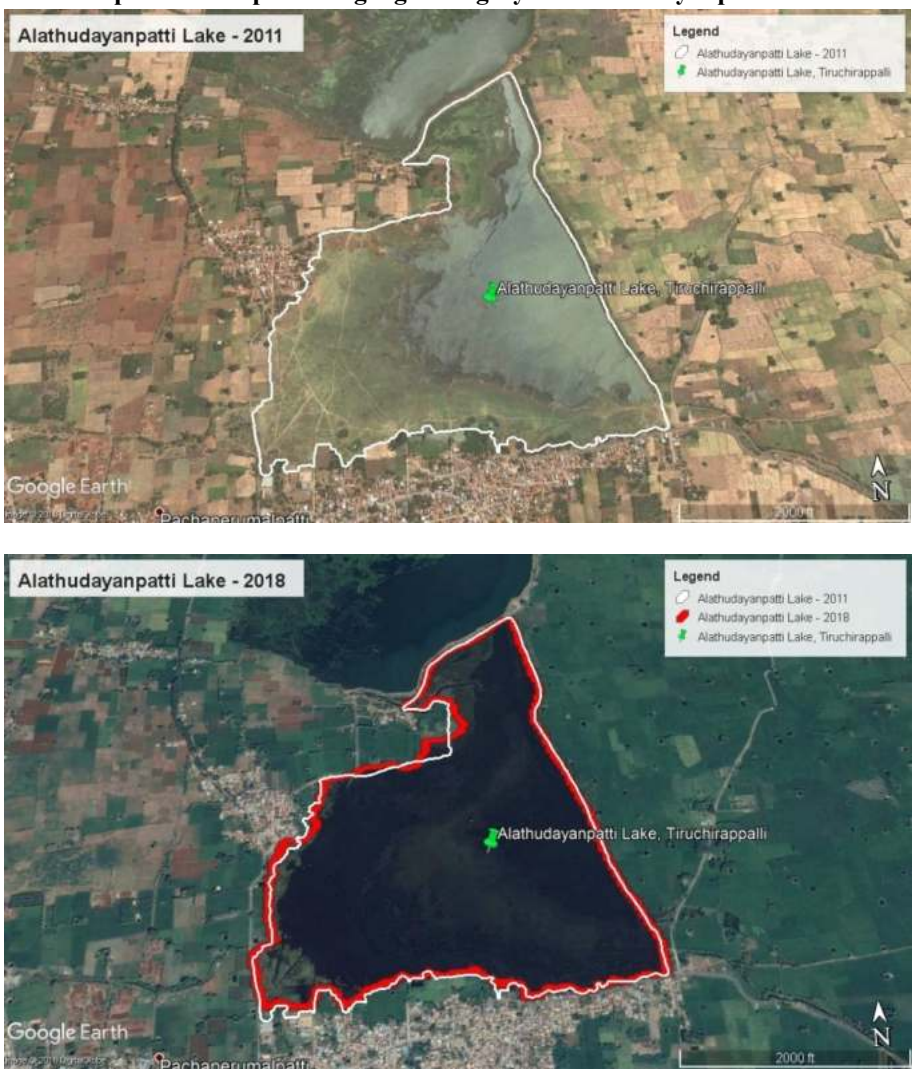
Table 25.4g: List of Bird species recorded along the Alathudaiyanpatti Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 2 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 3 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 4 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 5 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 6 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 7 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 8 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 9 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 10 | House Crow | *Corvus splendens* | Corvidae | Least Concern |

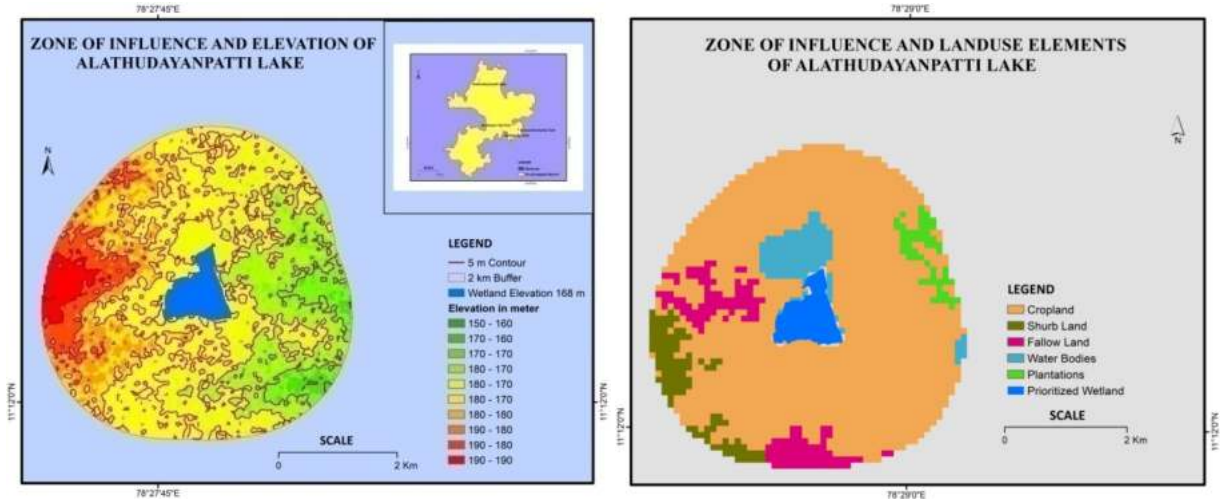
Table 25.4h: List of Mammal species recorded along the Alathudaiyanpatti Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 25.2: Comparative google imagery of Alathudaiyanpatti Lake**




**Map 25.3: Zone of influence around the Alathudayanpatti Lake**



**Gundur Lake**

**Lake Survey Number**: 186

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Gundur Lake (Plate 57).

1.2 Villages that surround the wetland include Gundur, Ayyampatty, Thiruvalarchipatty, Ayyamputhur, Burma Colony and Maduraiveeran Nagar.

1.3 & 1.4 The lake is based in Trichuripalli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 43'43.6" N; 10° 43'43.7" N; 10° 43'43.2" N; 10° 43'22.8" N; and Longitude: 078° 43'34.1" E; 078° 43'41.2" E; 078° 43'23.8" E; 078° 43'30.0" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Trichuripalli division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 128 hectares (Map 25.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 83 to 90 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Cauvery River, Rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of intermittent nature with extreme rare occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in the replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded form 8.4 to 8.5.
e) The lake has fresh water with the salinity recorded at 0.245 ppt at the time of sampling.
f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation. Moreover the wetland receives large quantities of sewage and effluents and is rich in nutrients the wetland has agriculture undertaken within the wetland.

2.6 Climatic setting

a) Rainfall for the month of February in Tiruchurappali was 0.1 mm.
b) The atmospheric temperature varied between 26.5 and 32.2°C and the humidity was form 53 to 72 %.

2.7 The area of zone of influence is 2355.98 hectares with a fixed buffer area of 2 kms around the wetland (Map 25.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%: | Grassland /Scrubland 05%; |
| Agriculture 60%; | Settlements (Rural) 25%; |
| Settlements (Urban) 05%; | Industrial 05%. |

2.9 The comparison of the wetland for the years 2002 and 2017 is given in Map 25.4 & 25.5.

**Section III- Biodiversity**

3.1 List of Plant species: 47 species of plants were recorded around the wetland during our visit (Table 25.5).

3.2 List of animal species : 96 animal species including 3 domestic species were recorded during the survey (Table 25.6a-j).

3.3 Species of Conservation importance: Two near Threatened species of fish were observed during the survey (Table 25.6a-j).
3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 30 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around and within the wetland and the wetland and ground water is used for irrigation.
4.3 Fishery is undertaken with permission form PWD in the lake, recreational fishery is also practiced.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.7 It is a major source of ground water recharge.
4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.9 The wetland does have several temples and other religious institutions along its bank, cultural activity is organized around the wetland.
4.11 There are agriculture activities within the wetland.
4.12 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.13 The wetland supports a vast diversity of fishery although the commercial fishery is not very significant.
4.14 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken but individuals fish in the lake based on the tenders.
5.2 There is agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture as the agriculture is practiced within and around the wetland.
5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 There is no organized fishing activity but fish seeds are released by the PWD.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chanel should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Gundur Lake

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Sivakami R., Sankar Rao Macherla., Shimna, P. and Premkishore G. (2011) Bacterial enumeration in surface and bottom waters of two different freshwater aquatic systems in Tamil Nadu, *Journal of Current Science* 16 (1), Pp. 91-95, (2011), ISSN-0972-6101.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S., (2004) Inland wetlands of India: Conservation Priorities. SACON, pp. 532.

Table 25.5: List of Plant species recorded along the Gundur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Abelmoschus ficulneus* | White wild Musk Mallow | Kattu Vendai | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 8 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 9 | *Cajanus scarabaeoides* | Showy Pigeonpea | Kaattu-kollu Chedi | Fabaceae | Native | LC |
| 10 | *Delonix regia* | Flame Tree | | Fabaceae | Invasive | LC |
| 11 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 16 | *Carica papaya* | Papaya Tree | Papali maram | Caricaceae | Native | DD |
| 17 | *Citrullus colocynthis* | Bitter Apple, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 18 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 19 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 20 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 21 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 22 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 23 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 24 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 25 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 26 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 27 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 28 | *Datura stramonium* | Common Thorn apple | Oomathai | Solanaceae | Native | NA |
| 29 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 30 | *Pedalium murex* | Large caltrops | Yanai | Pedaliaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | nerunji,Perunerunji | | | |
| 31 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 32 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 33 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 34 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 35 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 36 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 37 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 38 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, | Euphorbiaceae | Native | NA |
| 39 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 40 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 41 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 42 | *Hydrilla verticillata* | Water Thyme, hydrilla | Amiranappaci, cimpaka | Hydrocharitaceae | Native | LC |
| 43 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 44 | *Cyperus rotundus* | Common nut sedge, coco grass, purple nutsedge | Korai, korai kilangu, muthakasu | Cyperaceae | Native | LC |
| 45 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 46 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |
| 47 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 25.6a: List of Insects recorded along the Gundur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 6 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 7 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 8 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 9 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 10 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 25.6b: List of Diplopoda recorded along the Gundur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 25.6c: List of Butterflies recorded along the Gundur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 4 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 5 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 6 | Blue Tiger | *Tirumala limniace exoticus* | Danaidae | Common |
| 7 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 8 | Common Crow | *Euploea core* | Danaidae | Common |
| 9 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 10 | Lemon Pansy | *Junonia lemonias* | Nymphalidae | Common |

Table 25.6d: List of Dragonflies recorded along the Gundur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 5 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |

| | | | | |
|---|---|---|---|---|
| 7 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 8 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 25.6e: List of Arachnida recorded along the Gundur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 25.6f: List of Fish recorded form the Gundur Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 25.6g: List of Amphibians recorded form the Gundur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |
| 2 | Indian Cricket Forg | *Fejervarya limnocharis* | Dicroglossidae | Least Concern |

Table 25.6h: List of Reptiles recorded along the Gundur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 25.6i: List of Birds recorded along the Gundur Lake

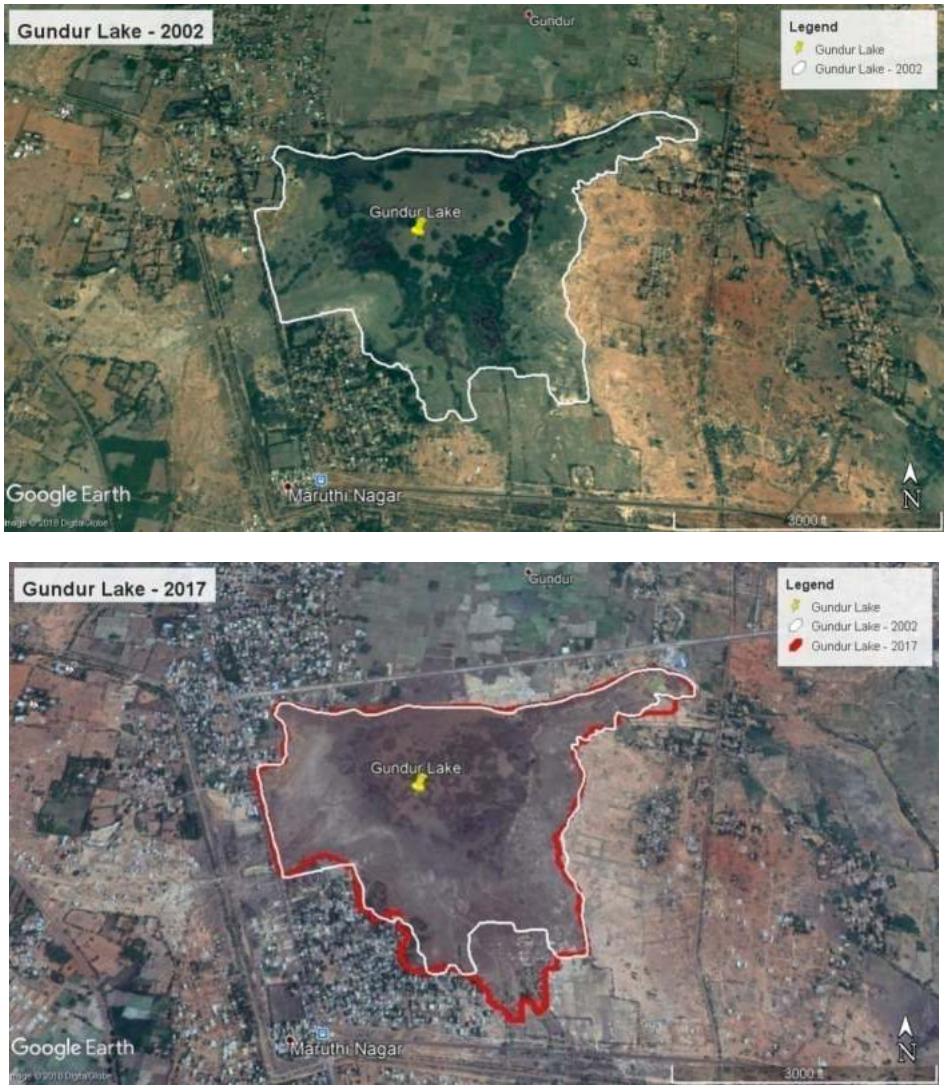
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Northern Shoveler | *Anas clypeata* | Anatidae | Least Concern |
| 4 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 5 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 6 | Yellow Bittern | *Ixobrychus sinensis* | Ardeidae | Least Concern |
| 7 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 8 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 9 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 10 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 11 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 12 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 13 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 14 | Osprey | *Pandion haliaetus* | Pandionidae | Least Concern |
| 15 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 16 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 17 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 18 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 19 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 20 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 21 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 22 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 23 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 24 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 25 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 26 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 27 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 28 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 29 | Indian Golden Oriole | *Oriolus kundoo* | Oriolidae | Least Concern |
| 30 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 31 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 32 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 33 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 34 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 35 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 36 | Clamorous Reed Warbler | *Acrocephalus stentoreus* | Acrocephalidae | Least Concern |
| 37 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 38 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 39 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 40 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 41 | Streaked Weaver | *Ploceus manyar* | Ploceidae | Least Concern |
| 42 | Indian Silverbill | *Euodice malabarica* | Estrildidae | Least Concern |
| 43 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |
| 44 | Yellow Wagtail | *Motacilla flava* | Motacillidae | Least Concern |
| 45 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

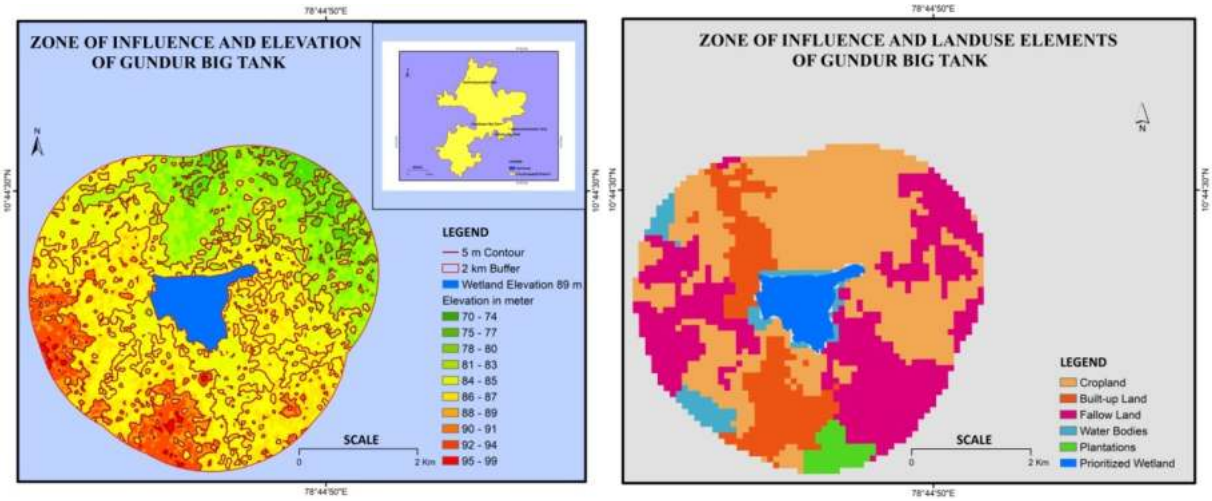
Table 25.6j: List of Mammals recorded along the Gundur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 25.4: Comparative Google imagery for GundurLake**




**Map 25.5: The zone of influence around the Gundur Lake**



**Koothappar Big Tank**

**Lake Survey Number:** 320

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Koothapar big tank (Plate 58), also known as Thiruverumbur Big Tank.

1.2 Villages that surround the wetland include Koothapar, Thiruverumbur, Murukur and Natarajapuram, Krishnasangumuthanur.

1.3 & 1.4 The lake is based in Tiruchuripalli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 47'27.6" N; 10° 47'51.4" N; 10° 47'52.1" N; 10° 47'52.6" N; 10° 47'53.3" N; and Longitude: 078°46'17.0"E; 078°46'16.0"E; 078°46'36.7"E; 078°46'42.4" E; 078°47'16.9" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Tiruchuripalli division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 97.4 hectares (Map 25.6).

2.2 The Wetland type - the wetlands belong to the Natural (inland) category in the sub category intermittent seasonal lakes. It receives water form the Cauvery River and the rainfall catchment.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 73 to 78 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is the Cauvery River and Rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is intermitent nature, as the wetland is mostly dependant on the Cauvery River, rainfall and runoff waters.
c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds Killiyur lake and the adjoining agriculture fields.
d) The pH of the water was form 7.8 to 8.3
e) The lake has fresh water and the salinity was 0.461 ppt.
f) The wetland had some water and the aquatic vegetation like *Eichornia crassipess, Ipomoeasp.* and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Tiruchurippali was 0.1 mm.
b) The atmospheric temperature varied between 31.1 and 35 °C and the humidity was form 30 to 45 %.

2.7 The area of zone of influence is 2290.28 hectares with a fixed buffer area of 2 kms around the wetland (Map 25.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/scrubland 10%; |
| Agricultural lands 600 %; | Settlements (rural) 100%; |
| Settlements (Urban) 20%; | Industrial 0%. |

2.9. The comparison of the wetland for the years 2010 and 2017 is given in Map 25.6 & 25.7.

**Section III- Biodiversity**

3.1 List of Plant species: 61 species of plants were recorded around the wetland during our visit (Table 25.7).

3.2 List of animal species: 106 animal species including 3 domestic species were recorded during the survey (Table 25.8a-h).

3.3 Species of Conservation importance: One Threatened species of bird was observed during the survey (Table 25.8a-h) however there are records of many threatened bird species sightings until 2002.

3.4 Major Plant invasive alien species and extent of invasion: 11 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion : no invasive species were recorded. Fishing is practiced in the wetland.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the borewell water, Cauvery River and Kollidam River at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 There are farmlands where agriculture is undertaken around the wetland using wetland and the borewell water.

4.3 Fishery is undertaken.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is used for fishery purpose and also serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge as well as provides water for agriculture.

4.9 There is runoff form the surrounding area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing through the wetland.

4.11 The site is majorly used by the locals for grazing their cattle and goats.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for wetland and terrestrial birds as we also recorded many bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is commercial fishery. The fishing activity is based on the tenders given by the local panchayat.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 There is excessive agriculture activity around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture or fishery purpose.

5.6 The wetland received water form different sources and is dry only during the peak summer months.

5.7 The locals are well aware of the importance of the wetland however there are no cleaning and awareness activities around the lake.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The wetland birds are facing the threat of poaching.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat aquatic weeds that is changing the wetland character. Solid waste dumping, encroachment and changes in land use pattern are the other concerns.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated. These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Koothapar Big tank**


Bubesh Guptha M., Lalitha Vijayan., Sandaliyan S. and Sridharan N. (2011) Status of Wetlands and Wetland Birds in Coimbatore, Trichy, Perambalore and Thiruvarur Districts in Tamil Nadu, India, *World Journal of Zoology*, 6 (2), Pp. 154-158, 2011, ISSN 1817-3098.

Mohanraj S. and Pandiyan J. (2014) Invasion of Shorebirds into inland wetlands of Periyakulam Lake, Tiruchirappalli, Southern India, *Journal of Sci. Trans. Environ. Technov*., 2014, 7(3) Pp. 113-117.

Mohanraj S. and Pandiyan J. (2015) Seasonal diversity of diving birds in the Periyakulam Lake, Tiruchirappalli, Tamil Nadu, India. *Journal of Sci. Trans. Environ. Technov*., 2015, 8(3) Pp. 132-135.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Ravichandran C. and Teneson R. (2015) Assessment of water quality in Koothapar wetland, Tiruchirappalli District, *International Research Journal of Engineering and Technology (IRJET)*, Volume: 02 Issue: 02, May-2015, ISSN: 2395-0056, Pp. 240-250.

Sivanantham Mohanraj and Jeganathan Pandiyan (2015) Aerial foragers in the Periyakulam Lake, Tiruchirappalli District, Tamil Nadu, Southern India, *International Journal of Pure and Applied Zoology*, Volume 3, Issue 3, Pp: 267-273, 2015 ISSN: 2320-9585.

Teneson R. and Ravichandran C. (2015) Diversity of Water birds in Koothapar Periyakulam Wetland in Tiruchirappalli District, Tamil Nadu, India, *International Research Journal of Environment Sciences*, 2015, ISSN 2319–1414 Vol. 4(11), Pp. 32-41.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, Pp. 532.


Table 25.7: List of Plant species recorded along the Koothappar Big Tank

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 8 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 11 | *Peltophorum pterocarpum* | Copperpod, Rusty shield bearer, | konraivagai | Fabaceae | Introduced | NA |
| 12 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 13 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 14 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 16 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 17 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 18 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 19 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, | Rubiaceae | Native | |
| 20 | *Bidens pilosa* | Beggar Tick | Mukkuthi | Asteraceae | Exotic | NA |
| 21 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 22 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 23 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 24 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 25 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 26 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 27 | *Marsdenia volubilis* | Sneeze Wort, Cotton milk plant | Kotippalai | Apocynaceae | Native | NA |
| 28 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 29 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, | Paalai | Apocynaceae | Native | LC |
| 30 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 31 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 32 | *Evolvulus alsinoides* | Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 33 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 34 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 35 | *Solanum nigrum* | Black nightshade, Poison berry | Manathakkali | Solanaceae | Native | NA |
| 36 | *Stachytarpheta jamaicensis* | Blue Porterweed | Seemai Nayuruvi | Verbenaceae | Native | NA |
| 37 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 38 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 39 | *Vitex negundo* | Chaste Tree | Nocchi | Lamiaceae | Native | NA |
| 40 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 41 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 42 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 43 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 44 | *Amaranthus blitum* | Purple Amaranth | Arumaatha Thandu | Amaranthaceae | Native | NA |
| 45 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 46 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 47 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 48 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 49 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 50 | *Asparagus racemosus* | Satawari | Tannir vittan | Asparagaceae | Native | NA |
| 51 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 52 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai | Commelinaceae | Native | LC |
| 53 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 54 | *Borassus flabellifer* | Palmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 55 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, | Arecaceae | Native | NA |
| 56 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 57 | *Cyperus corymbosus* | Peri peri | | Cyperaceae | Native | NA |
| 58 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 59 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 60 | *Eragrostis amabilis* | Japanese Lovegrass | | Poaceae | Native | NA |
| 61 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 25.8a: List of Insects recorded along the Koothappar Big Tank

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 25.8b: List of Butterflies recorded along the Koothappar Big Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Small Salmon Arab | *Colotis amata* | Pierinae | Common |
| 6 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 7 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 8 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 9 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 10 | Psyche | *Leptosia nina* | Pierinae | Common |
| 11 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 12 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 13 | Zebra Blue | *Leptotes plinius* | Polyommatinae | Common |
| 14 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 15 | Tiny Grass Blue | *Zizula hylax* | Polyommatinae | Common |
| 16 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 17 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 18 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 19 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 20 | Common Crow | *Euploea core* | Danainae | Common |
| 21 | Common Evening Brown | *Melanitis leda* | Satyrinae | Common |
| 22 | Dark Evening Brown | *Melanitis phedima varaha* | Satyrinae | Uncommon |
| 23 | Dark-Brand Bushbrown | *Mycalesis mineus* | Satyrinae | Common |
| 24 | Long-Brand Bushbrown | *Mycalesis visala* | Satyrinae | Common |
| 25 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 26 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 27 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 28 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 25.8c: List of Dragonflies recorded along the Koothappar Big Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 7 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 8 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |
| 10 | Coral-Tailed Cloud Wing | *Tholymis tillarga* | Libellulidae | Common |

Table 25.8d: List of Arachnida recorded along the Koothappar Big Tank

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 25.8e: List of Fishes recorded form the Koothappar Big Tank

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

Table 25.8f: List of Reptiles recorded along the Koothappar Big Tank

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 25.8g: List of Birds recorded along the Koothappar Big Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Garganey | *Anas querquedula* | Anatidae | Least Concern |
| 4 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 5 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 6 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 7 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 8 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 9 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 10 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 11 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 12 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 13 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 14 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 15 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 16 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 17 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 18 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 19 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 20 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 21 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 22 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 23 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 24 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 25 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 26 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 27 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 28 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 29 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 30 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 31 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 32 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 33 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 34 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 35 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 36 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 37 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 38 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 39 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 40 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 41 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 25.8h: List of Mammals recorded along the Koothappar Big Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |
| 5 | Indian grey Mongoose | *Herpestes edwardsi* | Herpestidae | Least Concern |

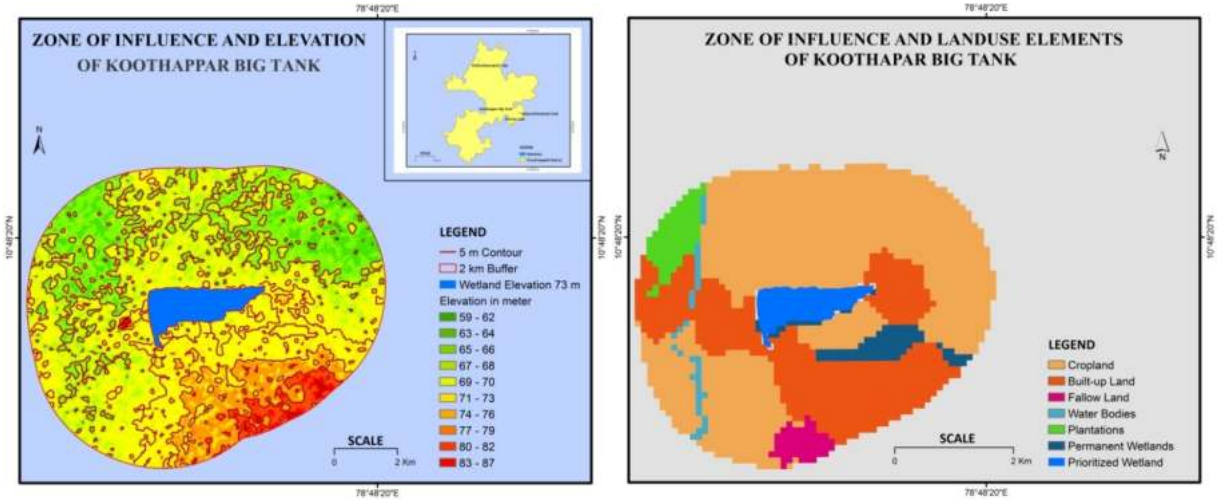
**Map 25.6: Comparative Google imagery for Koothappar Big Tank**







**Map 25.7: The zone of influence around the Koothappar Big Tank.**



**Valavanthankottai Tank**

**Lake Survey Number**: Not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Valavandankotai tank also known as Nathikulam, Thuvakudi Pond (Plate 58).

1.2 Villages that surround the wetland include Valavandankotai and National Highway.

1.3 & 1.4 The lake is based in Triuvembarur taluka in Trichuripalli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 44'32.7" N; 10° 44'35.7" N; 10° 44'40.6" N; 10° 44'41.7" N; 10° 45'14.8" N; and Longitude: 078° 50'09.6" E; 10° 44'41.7" N; 078° 50'11.7" E; 78° 50'17.0" N; 78° 50'30.1" N;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Trichuripalli division..

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 123 hectares (Map 25.8).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 78 to 81 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Cauvery River, Rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of intermittent nature lasting for six months with extreme rare occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in the replenishing the groundwater.
d) The pH of the water was not possible as the wetland was dry during our visit.
e) The lake has fresh water with the salinity as per the secondary information is freshwater.
f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation. Moreover the wetland receives large quantities of sewage and effluents and is rich in nutrients the wetland has agriculture undertaken within the wetland.

2.6 Climatic setting

a) Rainfall for the month of February in Tiruchurappali was 0.1 mm.
b) The atmospheric temperature was 30°C and the humidity was 60 %

2.7 The area of zone of influence is 2270.23 hectares with a fixed buffer area of 2 kms around the wetland (Map 25.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%: | Grassland /Scrubland 0%; |
| Agriculture 60%; | Settlements (Rural) 40%; |
| Settlements (Urban) 0%; | Industrial 0%. |

2.9 The comparison of the wetland for the years 2010 and 2018is given in Map 25.8 & 25.9.

**Section III- Biodiversity**

3.1 List of Plant species: 28 species of plants were recorded around the wetland during our visit (Table 25.9).

3.2 List of animal species: 33 animal species including 2 domestic species were recorded during the survey (Table 25.10a-g).

3.3 Species of Conservation importance: One near Threatened specie of fish were observed during the survey (Table 25.10a-g).

3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including several unidentified grass species, *Eichornea crassipes, Prosopis juliflora* and *Ipomoea sp.* formed nearly 70 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around and within the wetland and the wetland and ground water is used for irrigation.

4.3 Fishery is undertaken with permission form village panchayat and PWD in the lake, recreational fishery is also practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.7 It is a major source of ground water recharge.

4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.9 The wetland does have few temples and other religious institutions along its bank, cultural activity is organized around the wetland.

4.11 There are agriculture activities within the wetland.

4.12 The wetland provides a suitable habitat for birds as we recorded the terrestrial bird species during our survey.

4.13 The wetland supports a vast diversity of fishery although the commercial fishery is not very significant.

4.14 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken but individual's fish in the lake based on the tenders.

5.2 There is agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture as the agriculture is practiced within and around the wetland.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.

6.3 There is no organized fishing activity but fish seeds are released by the PWD.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chanel should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Valavanthankottai Tank

TNN (Aug. 26, 2018) Two held for hunting birds and possessing gun. (timesofindia.indiatimes.com/city/trichy/2-held-for-hunting-birds-possessing-gun/articleshow/65546475.cms)

Cheran J. (Mar 25, 2018) ebird checklist (ebird.org/view/checklist/S43934408)

Table 25.9: List of Plant species recorded along the Valavanthankottai Tank

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 3 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 4 | *Albizia saman* | Rain Tree | Thoongumoonji maram | Fabaceae | Exotic | NA |
| 5 | *Peltophorum pterocarpum* | Copperpod, Rusty shield bearer, Peela gulmohar | konraivagai | Fabaceae | Introduced | NA |
| 6 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 7 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 8 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 9 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 10 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 11 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 12 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 13 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 14 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 15 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 16 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 17 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 18 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 19 | *Barleria cuspidata* | Spiny Barleria, lesser yellow nail dye | mancat-cemmulli, vellai-mulli | Acanthaceae | Native | |
| 20 | *Justicia tranquebariensis* | Tarangambadi Justicia | Punnaku Poodu, Mutaliyar, Narimurunkai, Niyakkiyam | Acanthaceae | Native | |
| 21 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 22 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 23 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 24 | *Euphorbia antiquorum* | Triangular Spurge, Square Spurge, Fleshy spurge | Chaturakalli, Kalli, Kodiravam, Tiruvargalli | Euphorbiaceae | Native | |
| 25 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 26 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 27 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 28 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 25.10a: List of Insects species recorded along the Valavanthankottai Tank

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 2 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |

| | | | |
|---|---|---|---|
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 6 | Ant species | *Polyrhachis rastellata* | Formicidae |

Table 25.10b: List of Butterfly species recorded along the Valavanthankottai Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 2 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 3 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 25.10c: List of Odonata species recorded along the Valavanthankottai Tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 25.10d: List of Fish species recorded form the Valavanthankottai Tank

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 25.10e: List of Reptile species recorded along the Valavanthankottai Tank

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 25.10f: List of Bird species recorded along the Valavanthankottai Tank

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 2 | White-eyed Buzzard | *Butastur teesa* | Accipitridae | Least Concern |
| 3 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 4 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 5 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 6 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 7 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 8 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 9 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 10 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 11 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 12 | Indian Silverbill | *Euodice malabarica* | Estrildidae | Least Concern |
| 13 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 14 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

Table 25.10g: List of Mammal species recorded along the Valavanthankottai Tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |

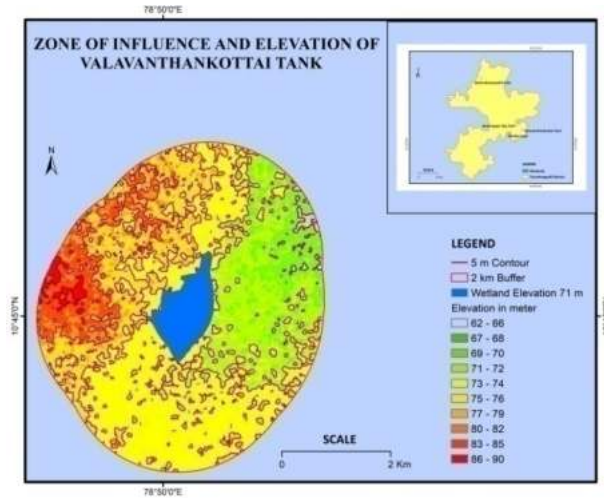
**Map 25.8: Comparative google imagery for Valavanthankottai Tank**

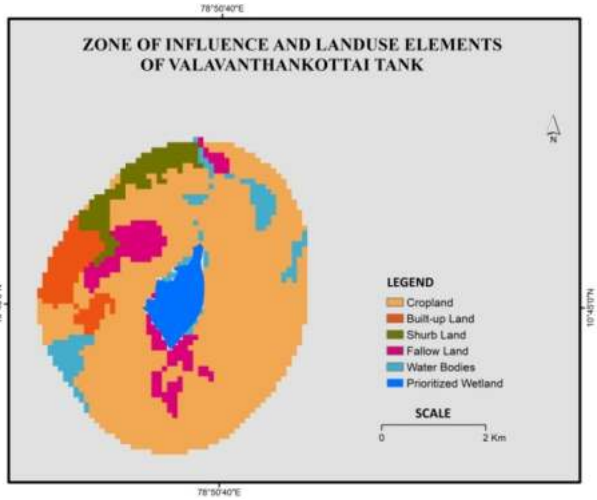






**Map 25.9: Zone of influence around the Valavanthankottai Tank**



## 26. Tirunelveli District

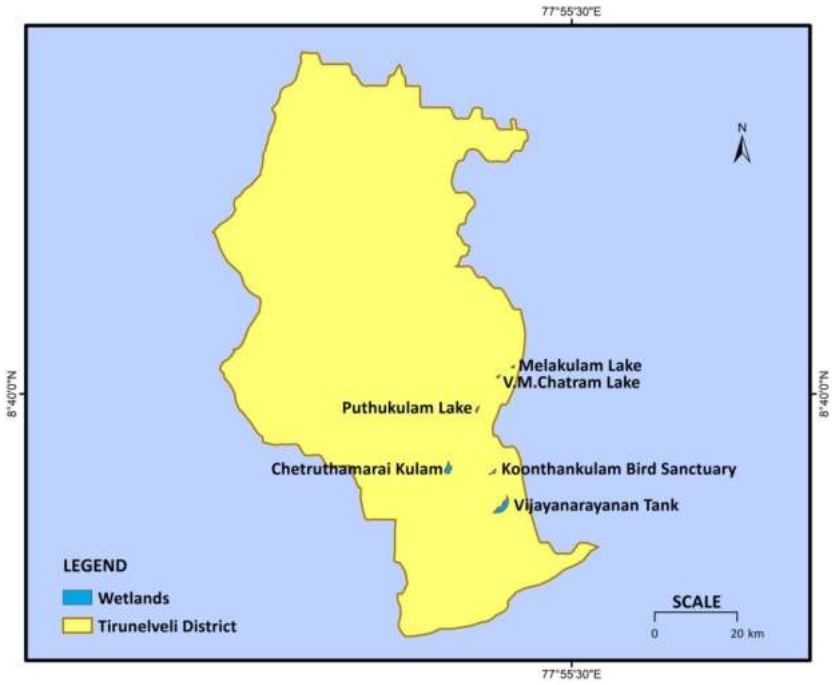
### Introduction

Tirunelveli is a southern most district of Tamil Nadu bordered by the State of Kerala, Gulf of Mannar and the districts of Virudhunagar, Thoothukudi and Kanniyakumari form different directions. Tirunelveli District was formed by the East India Company (on behalf of the British government), and comprised the present Tirunelveli and Thoothukudi districts and parts of Virudhunagar and Ramanathapuram districts. It is the second-largest district (as of October 2008), after Villupuram district. Under the rule of the Pandyan Dynasty, the district was known as *Thenpandiyanadu*. The Chola dynasty then named it *Mudikonda Cholamandalam*. The Madurai Nayaks called it *Tirunelveli Seemai*. Under the British East India Company, it was *Tinnevelly district*.

The district contains mountains (a stretch of the Western Ghats) and lowland plains, including sandy soil and fertile alluvium, and a variety of flora, fauna and protected wildlife. The district also has inland and mountainous forests. Tirunelveli is said to be the only district of Tamil Nadu to have all the five types of ecological zones as described in the ancient Tamil Literature Kurunji (hilly), Mullai (Forest), Marutham (Flat fertile land), Neithal (area forming the seashore) and Palai (Dry desert lands). The district is irrigated by several Rivers originating in the Western Ghats, such as the Pachaiyar River, which flows into the perennial Tambaraparani River. The Tambaraparani and Manimuthar Rivers have many dams, with reservoirs providing water for irrigation and power generation. The Tamiraparani River provides consistent irrigation to a large agricultural area. The Chittar River also originates in this district. The district is known for its paddy fields.

Total geographic area of Tirunelveli is 6823 km². Total area under wetland is 36998 ha, which includes 1042 small wetland (<2.25 ha). Lakes/Ponds occupy 40.68% of wetland area. The second major wetland type is Tanks/Ponds. There are 1368 Tanks/Ponds with 14509 ha area (39.22%).

SACON during 2004 had prioritized four wetlands form Madurai district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these four wetlands to assess its present potential for conservation. (Map26.1).The other two wetlands were selected based on decadal changes on thegoogle map.




**Map 26.1: Wetlands of Tirunelveli District Assessed for Prioritization**

**Observations**

Of the six wetlands selected in the district, Vijayanarayanam tank is the largest while V M Chatram is the smallest of the wetlands. Around the wetlands, we recorded 137 plant species both aquatic and terrestrial including 17 invasive species (Table 26.1). The faunal components totaled 156 species with the representation of 81 bird species including the wetland birds. The field study revealed that Puthukulam and V M Chatramwere mesotrophic while the other four wetlands were Oligotrophic in tatus (Table 26.2).

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local and regional level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Koonthakulam Bird Sanctuary. Agricultural practices around and within some wetlands were a major concern as it influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. V.M.Chatram Lake
2. Chetruthamarai Kulam
3. Puthukulam Lake
4. Melakulam Lake
5. Vijayanarayanan Tank
6. Koonthankulam Bird Sanctuary

Table 26.1: The flora and fauna recorded form the wetlands of Thirunelveli District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Koonthankulam Bird sanctuary | 58(11) | 8 | 5 | 14 | 1 | 7 | 0 | 3 | 58 | 4 |
| 2 | Melakulam Lake | 35(6) | 3 | 5 | 16 | 2 | 10 | 0 | 1 | 37 | 4 |
| 3 | Puthukulam Lake | 52(12) | 6 | 3 | 13 | 2 | 10 | 0 | 2 | 57 | 4 |
| 4 | V.M.Chatram Lake | 36(9) | 7 | 9 | 17 | 2 | 7 | 0 | 1 | 29 | 4 |
| 5 | Vijayanarayanan Tank | 56(9) | 1 | 5 | 5 | 0 | 10 | 0 | 1 | 29 | 4 |
| 6 | Chetruthamarai Kulam | 40(7) | 7 | 6 | 5 | 1 | 15 | 1 | 1 | 31 | 4 |
| | Total | 137(17) | 13 | 13 | 22 | 2 | 17 | 1 | 3 | 81 | 4 |

Table 26.2: The water and soil quality assessed form the wetlands of Thirunelveli District

| District Name | Thirunelveli | | | | | |
|---|---|---|---|---|---|---|
| **Wetland Name** | Chetruthamarai Kulam | Koonthankulam Bird Sanctuary | Melakulam Lake | Puthukulam Lake | V.M. Chatram Lake | Vijayanarayana n Tank |
| **Wetland area (ha)** | 291 | 72.3 | 34.3 | 63.9 | 32.6 | 512 |
| **Buffer Area in Hectare (ha)** | 2835.64 | 2256.37 | 1790.75 | 2110.02 | 1845.04 | 3842.57 |
| **Air Temperature °C** | 34 | 22.2 | 26.3 | 24 | 26 | 33.1 |
| **Water Temperature °C** | 32.6 | 28.8 | 26.9 | 23 | 25.7 | 31.7 |
| **Humidity %** | 37 | 89 | 65 | 75 | 79 | 55 |
| **Nutrients in Water** | Oligotrophic | Oligotrophic | Oligotrophic | Mesotrophic | Mesotrophic | Oligotrophic |
| **Water pH** | 9.2 | 8 | 7.2 | 7.2 | 7.2 | 8.7 |
| **Water TDS ppm** | 840 | 60 | 80 | 66 | 266 | 208 |
| **Water Conductivity ppm** | 1119 | 306 | 328 | 353 | 346 | 293 |
| **Light Penetration cms** | 31 | 22 | 65 | 50 | 18 | 7 |
| **Water Salinity ppt** | 0.061 | 0.102 | 0.138 | 0.120 | 0.317 | 0.141 |
| **DO mg/L** | 7.93 | 8.54 | 11.18 | 8.33 | 10.98 | 7.52 |
| **PO4P mg/L** | 0.021 | 0.082 | 0.056 | 0.021 | 0.038 | 0.014 |
| **Water Na ppm** | 1098 | 12.75 | 33 | 20.43 | 14.5 | 1245 |
| **Water K ppm** | 4.5 | 5.7 | 3.25 | 3.7 | 9.1 | 4.45 |
| **Water Li ppm** | 0.5 | 0 | 0 | 0.1 | 0 | 0.5 |
| **Water Ca ppm** | 109.3 | 51.6 | 24.1 | 50.3 | 13.5 | 105.7 |
| **Soil Colour code** | 5YR 5/8 | 10YR 5/4 | 2.5YR 6/6 | 10YR 5/6 | 10YR 4/6 | 7.5YR 5/4 |
| **Soil Colour** | Yellowish Red | Yellowish Brown | Light Red | Yellowish Brown | Dark Yellowish Brown | Brown |
| **Soil pH** | 6.28 | 7.61 | 7.57 | 7.4 | 7.55 | 7.28 |
| **Soil TDS ppm** | 105 | 90.3 | 108 | 113 | 115 | 102 |
| **Soil Conductivity ppm** | 148.1 | 126.2 | 151.8 | 159.2 | 161.5 | 140 |
| **Soil Salinity ppt** | 0.073 | 0.064 | 0.075 | 0.078 | 0.079 | 0.071 |
| **Soil Na ppm** | 10.9 | 4.4 | 7.6 | 7.2 | 6.4 | 4.6 |
| **Soil K ppm** | 3.4 | 6.3 | 0.6 | 0.3 | 2.3 | 4.4 |
| **Soil Li ppm** | 0.1 | 0 | 0.1 | 0.1 | 0 | 0.1 |
| **Soil Ca ppm** | 4.8 | 12.6 | 7.8 | 13.9 | 11.9 | 7.3 |

**Chetruthamarai Kulam**

**Lake Survey Number:** 12/2

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Chetruthamarai kulam(Plate 59) also known as Nanguneri Periyakulam.

1.2 Villages that surround the wetland include Marugalkurichi, Nanguneri town

1.3 & 1.4 The lake is based in Nanguneri taluk in Tirunelveli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 31'08.7" N; 08° 29'37.4" N; 08° 49'32." N; 08° 29'35.0" N; and Longitude: 077° 39'21.0" E; 077° 39'10.8" E; 077° 39'04.5" E 077° 39'30.8" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 291 hectares (Map 26.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal tank.

2.3 Based on the secondary information the average depth is 1.5 to 5 meters for the wetland.

2.4 The elevation of the wetland is 96 to 105 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and the Manimudhara dam on the Thambraparani River.

b) The water in the wetland is intermitent nature with some water present only for a few months following the rains, as the wetland is mostly dependant on the rainfall and runoff waters and the Thambraparani River, during our visit the wetland had some water.

c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds the thamraparani River.

d) The pH of the water was 9.2.

e) The lake has fresh water as the salinity was 0.061 ppt.

f) The wetland banks were completely dry and the aquatic vegetation like *Prosopis, Ipomoea sp*. and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January 2018 in Madurai was 25.8 mm.

b) The atmospheric temperature was 34 °C.

2.7 The area of zone of influence is 2835.64 hectares with a fixed buffer area of 2 kms around the wetland (Map 26.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/scrubland 0%; |
| Agricultural lands 20 %; | Settlements (rural) 30 %; |
| Settlements (Urban) 50%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2003 and 2018 is given in Map 26.2 & 26.3.

**Section III- Biodiversity**

3.1 List of Plant species: 37 species of plants were recorded around the wetland during our visit (Table 26.3).

3.2 List of animal species: 71 animal species including 3 domestic species were recorded during the survey (Table 26.4 a-i).

3.3 Species of Conservation importance: Three Threatened species of birds and one fish specie were observed during the survey (Table 26.6a-i).
3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.*formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland using the wetland water and borewell water.
4.3 Fishery is not undertaken on a regular basis only when the water is present.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area mostly the agricultural lands during the rains.
4.10 The wetland has the some large temples as well as a few small temples along its bank and major cultural and religious activities are performed in the wetland when water is present.
4.11 The site is used majorly by the locals for grazing their cattle and goats.
4.12 There are no agriculture activities within the wetland but only along the edges.
4.13 The wetland still provides a suitable habitat for terrestrial and water birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.
4.15 Around the wetland there is encroachment observed along with solid waste dumping was observed on a minor scale. There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture not undertaken within the wetland.
5.3 There is agriculture all around the wetland.
5.4 Grazing by the cattle and sheep is undertaken.
5.5 There is no withdrawal of water for agriculture purpose.
5.6 The locals are well aware of the importance of the wetland however the scanty rains and the lack of water in the wetland was disturbing.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.
6.2 The wetland has been facing the sewage problems with the growing number of industries.
6.3 There is a good incursion of invasive species that is changing the wetland structure.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character. Increase in effluents and sewage is disturbing.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for**


Abhisheka K., Patrick David J., Prashanth M. B., Seshadri K. S. and Ganesh T. (2013) First detailed survey of waterbirds in Tirunelveli and Tuticorin districts, Tamil Nadu, India. *Journal of Threatened Taxa*. 5(12), 4641-4652.

Kalasans R. (2005) Irrigation System in Tirunelveli District form 1901-1997. Ph. D Thesis. Dept. of History. Manonmaniam Sundaranar University, Tirunelveli.

Lakshmanan R. (2016) Phytodiversity stidies of selected wetlands of tirunelveli district tamilnadu.Ph. D Thesis. Manonmaniam Sundaranar University, Tirunelveli.


Table 26.3: List of Plant species recorded along the Chetruthamarai Kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattu kasturi | Malvaceae | Native | NA |
| 4 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 5 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 6 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 7 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 8 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 9 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 10 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 11 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 12 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 13 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 14 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 15 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 16 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 17 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 18 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 19 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 20 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 21 | *Evolvulus alsinoides* | Dwarf morning glory,Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 22 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 23 | *Utricularia aurea* | Golden Bladderwort | | Lentibulariaceae | Native | LC |
| 24 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 25 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 26 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 27 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 28 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 29 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 30 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 31 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 32 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 33 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 34 | *Cyperus corymbosus* | Peri peri | | Cyperaceae | Native | NA |
| 35 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 36 | *Cyperus rotundus* | Common nut sedge, | Korai, korai kilangu, | Cyperaceae | Native | LC |
| 37 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.4a: List of Insect species recorded along the Chetruthamarai Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Grasshopper species | *Chrotogonus trachypterus* | Pyrgomorphidae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 4 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 7 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 26.4b: List of Butterfly species recorded along the Chetruthamarai Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 4 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 26.4c: List of Odonate species recorded along the Chetruthamarai Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 26.4d: List of Arachnida species recorded along the Chetruthamarai Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 26.4e: List of Fish species recorded form the Chetruthamarai Kulam

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 9 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 10 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 11 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 12 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 13 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 14 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 15 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.4f: List of Amphibian species recorded form the Chetruthamarai Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |

Table 26.4g: List of Reptile species recorded along the Chetruthamarai Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

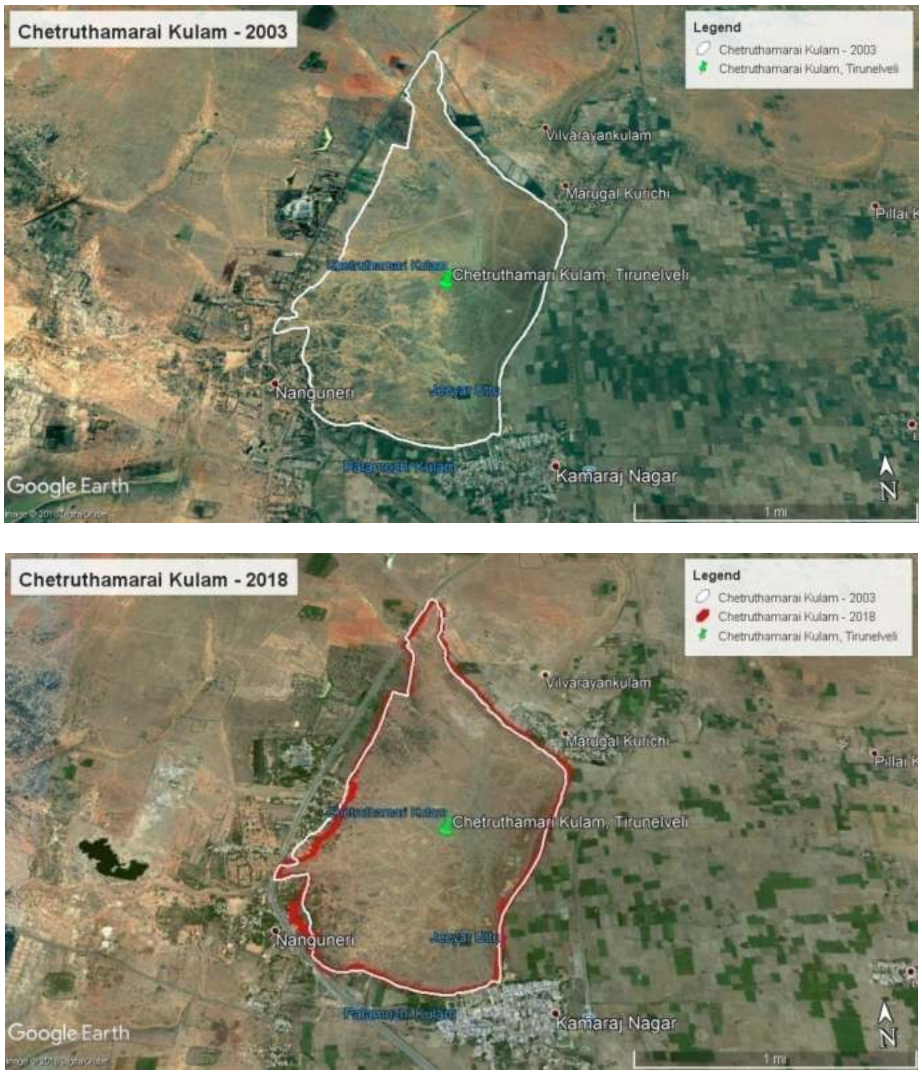
Table 26.4h: List of Bird species recorded along the Chetruthamarai Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Knob-billed Duck | *Sarkidiornis melanotos* | Anatidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 4 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 5 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 6 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 7 | Red-naped Ibis | *Pseudibis papillosa* | Threskiornithidae | Least Concern |
| 8 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 9 | Eurasian Spoonbill | *Platalea leucorodia* | Threskiornithidae | Least Concern |
| 10 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 11 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 12 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 13 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 14 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 15 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 16 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 17 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 18 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 19 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 20 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 21 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 22 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 23 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 24 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 25 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 26 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 27 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 28 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 29 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 30 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 31 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

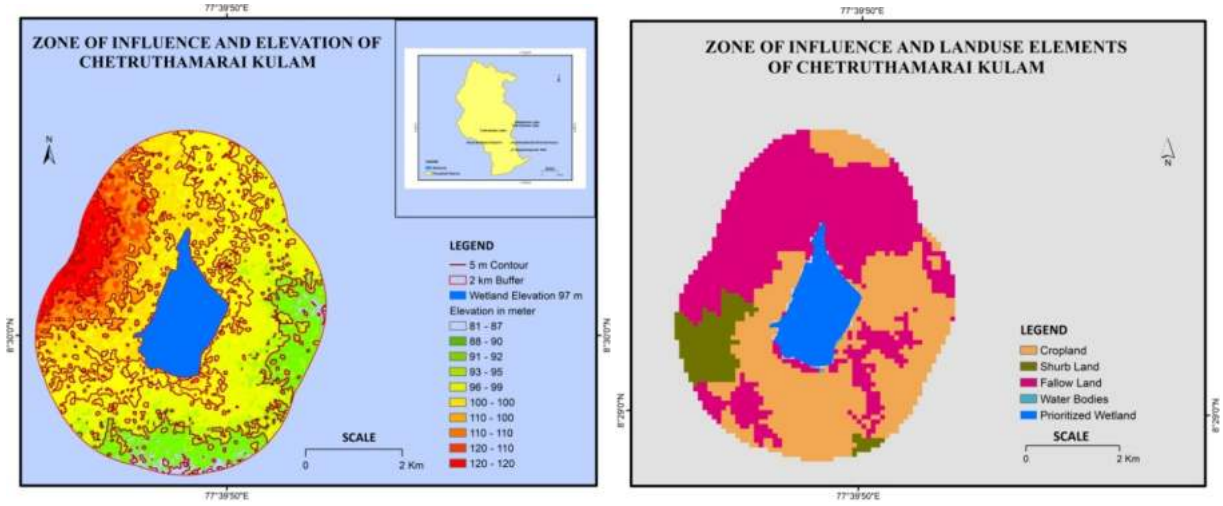
Table 26.4i: List of Mammal species recorded along the Chetruthamarai Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 26.2: Comparative google map for Chetruthamarai Kulam**




**Map 26.3: Zone of Influence around the Chetruthamarai Kulam**



**Koonthankulam Bird Sanctuary**

**Lake Survey Number**: not provided.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Koonthakulam Bird Sanctuary Lake (Plate 59).

1.2 Villages that surround the wetland include Koonthakulam, Kodankulam, Kadankulam, Silayam, Arumuganera, Kadambankulam.

1.3 & 1.4 The lake is based in Tirunelveli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 29'42.5" N; 08° 29'37.4" N; 08° 29'33.4" N; and Longitude: 077° 45'29.7" E; 077° 45'28.6" E; 077° 45'22.5" E;

1.6 The wetland is a Protected Area as it has been declared a Bird Sanctuary.

1.7 The wetland comes under the jurisdiction of Tamil Nadu Forest Department, Tirunelveli division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 72.3 hectares (Map 26.4).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 2 meters for the wetland.

2.4 The elevation of the wetland is 69 to 75 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Manimuthuru Dam.
b) The water in the wetland is mostly of intermittent nature with now frequent occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in replenishing the groundwater.
d) The pH of the water was form 6.5 to 6.7.
e) The lake has fresh water as the salinity was 1.102 ppt.
f) The wetland was observed to have maximum terrestrial vegetation along with the aquatic vegetation.

2.6 Climatic setting

a) Rainfall for the month of December in Madurai was 25.8 mm.
b) The atmospheric temperature was form 21.02 to 22.2°C

2.7 The area of zone of influence is 2256.37 hectares with a fixed buffer area of 2 kms around the wetland (Map 26.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 10%; | Grassland & Shrubland 5 % |
| Agriculture 80%; | Settlements (Rural) 5%. |
| Settlements (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2003 and 2017 is given in Map 26.4 & 26.5.

**Section III- Biodiversity**

3.1 List of Plant species: 54 species of plants were recorded around the wetland during our visit (Table 26.5).

3.2 List of animal species: 100 animal species including 3 domestic species were recorded during the survey (Table 26.6a-h).

3.3 Species of Conservation importance: Three near Threatened species of birds and one fish species were observed during the survey (Table 26.8a-h).

3.4 Major Plant invasive alien species and extent of invasion: 11 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion – Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The village has open dug wells and borewells for their regular needs.
4.2 Agriculture is undertaken around and the wetland and the ground water is used for irrigation.
4.3 Fishery is not undertaken permission in the lake, but the fish is cultured to provide for the birds in the sanctuary.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetlands recives good population of nature enthusiast as tourist to the Bird Sanctuary.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The forest department undertakes regular desiltation activities during the summer season to maintain the depth of the lake.
4.10 The wetland does have three temples religious institutions along its bank, a few cultural activities are organized around the wetland.
4.11 The wetland surroundings is used by locals for agriculture and extraction of water only.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a diversity of fishery although the commercial fishery is not practiced.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of ground water for agriculture as the agriculture is practiced around the wetland.
5.6 The wetland is not used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is no organized fishing activity.
6.3 There are few invasive plant species that is changing the habitat of the wetland.

**Section VII Notification Category**

The wetland is declared as sanctuary and received protection and conservation form the forest department and is below 2500m below Sea level. It is also known as a community conservation reserve as it was established by the local community.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form lack of water availability due to scarcity of rains.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

There is no such activity observed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Koonthankulam Bird Sanctuary


Collar N.J., Andreev A.V., Chan S., Subramanya S., Tobias J. A., Rudyanto and Crosby M. J. (2001) Spot-billed pelican (Pelecanus philippensis) Threatened birds of Asia, Birdlife International (2001) Threatened birds of Asia: the Birdlife International Red Data Book. Cambridge, UK: Birdlife International, Page 68-103, ISBN 0 946888 442.

Gokula V. (2011) An ethogram of Spot-billed Pelican (*Pelecanus philippensis*). *Chinese Birds.* 2(4):183–192.

Jayakumar S. and Muralidharan S. (2010) Diversity of Colonial Nesting Birds in Different Heronries of Tamil Nadu. *Proceedings of UGC Sponsored National Conference on Modern trends in Biodiversity Conservation and its sustainable utilization*. pp. 7-18.

Kannan V. and Ranjit Manakadan. (2005) The status and distribution of Spot-billed Pelican *Pelecanus philippensis* in Southern India. *Forktail*. 2: 9–14.

Samidurai Jayakumar, Muralidharan S. and Santhanakrishnan Babu. (2014) A hitherto unrecorded sighting of the Common Pochard *Aythya ferina* (Linnaeus, 1758) (Aves: Anseriformes: Anatidae) in Vedanthangal Bird Sanctuary, Tamil Nadu, India. *Journal of Threatened Taxa.* 6(11): 6485–6487.

Santhakumar B., Mohamed Samsoor Ali A., and Arun P.R. (2016) Status of Greater Spotted Eagle *Clanga clanga* in Tamil Nadu, and Puducherry, India. *Indian Birds.* 11(3): 71-74.

Subramanya S. (2005) Heronries of Tamil Nadu. *Indian Birds*. 1(6): 125-148.

Vaithianathan Kannan and Jeganathan Pandiyan (2012) Nesting Ecology of the Spot-Billed Pelican *Pelecanus Philippensis* in Southern India. *World Journal of Zoology.* 7(4): 295-302.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 26.5: List of Plant species recorded along the Koonthankulam Bird Sanctuary

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 9 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 10 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 11 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 12 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 13 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 14 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 15 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 16 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 17 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 18 | *Terminalia catappa* | Indian Almond | Nattuvadumai, Vadumai | Combretaceae | Native | NA |
| 19 | *Syzygium cumini* | Java plum | Naaval plum | Myrtaceae | Native | NA |
| 20 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 21 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 22 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter | kumatti, pey-komatti | Cucurbitaceae | Native | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | cucumber, Egusi, Vine of Sodom | | | | |
| 23 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 24 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 25 | *Spermacoce ocymoides* | Purple leaved button | | Rubiaceae | Native | LC |
| 26 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 27 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 28 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 29 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 30 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 31 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 32 | *Tylophora indica* | Indian Ipecac, swallow-wort, vomiting swallow-wort | kalutai-p-palai, naccaruppan, | Apocynaceae | Native | |
| 33 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 34 | *Stachytarpheta jamaicensis* | Blue Porterweed | Seemai Nayuruvi | Verbenaceae | Native | NA |
| 35 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 36 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 37 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 38 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 39 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 40 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 41 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 42 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 43 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 44 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 45 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 46 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 47 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 48 | *Breynia vitis-idaea* | Mountain Coffee Bush | | Phyllanthaceae | Native | NA |
| 49 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 50 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 51 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 52 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 53 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 54 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.6a: List of Insects recorded along the Koonthankulam Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 6 | Pharaoh Ant | *Monomorium pharaonis* | Formicidae |
| 7 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 26.6b: List of Butterflies recorded along the Koonthankulam Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 6 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |

| | | | | |
|---|---|---|---|---|
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Dark Evening Brown | *Melanitis phedima varaha* | Satyrinae | Uncommon |
| 12 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 13 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 14 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 26.6c: List of Dragonflies recorded along the Koonthankulam Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 5 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 26.6d: List of Arachnida recorded along the Koonthankulam Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 26.6e: List of fishes recorded form the Koonthakulam Bird Sanctuary

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.6f: List of Reptile recorded along the Koonthakulam Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake Skink | *Lygosoma punctatus* | Scincidae | Least Concern |

Table 26.6g: List of Birds recorded along the Koonthankulam Bird Sanctuary

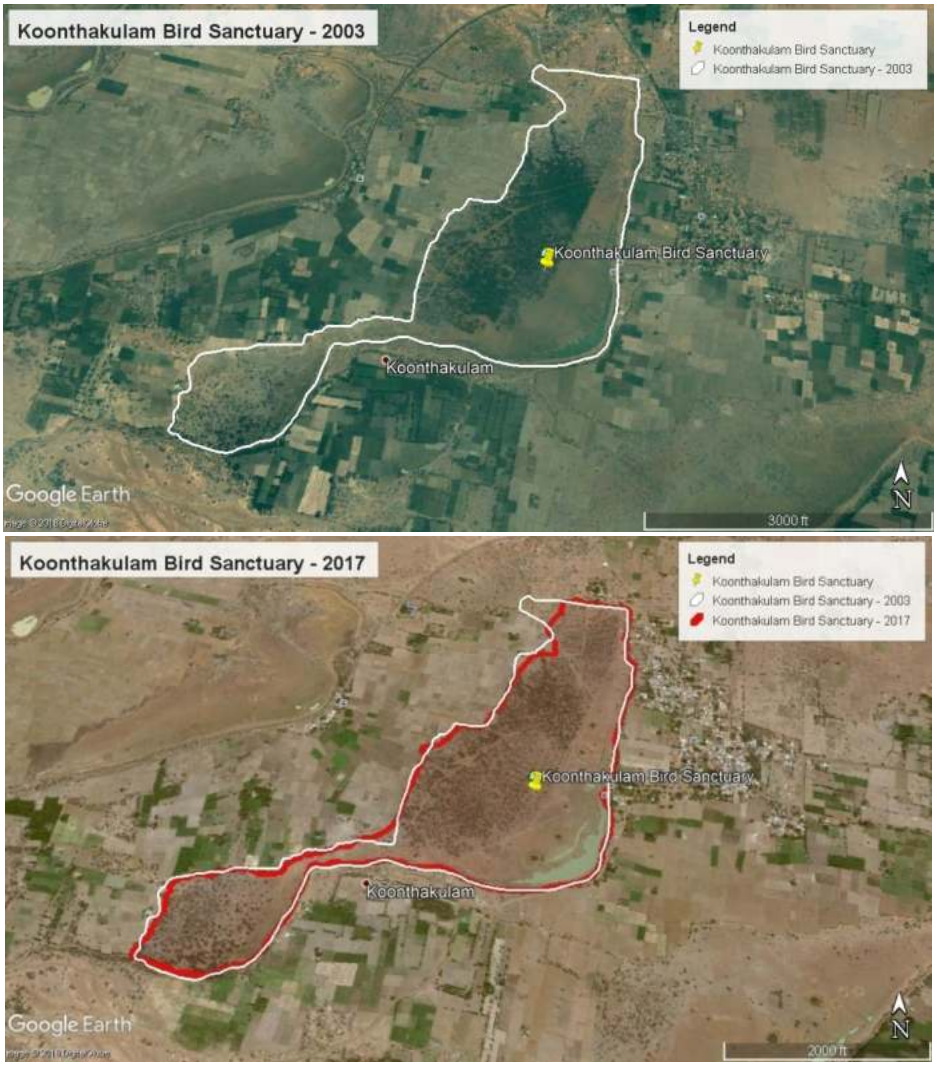
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 3 | Bar-headed Goose | *Anser indicus* | Anatidae | Least Concern |
| 4 | Knob-billed Duck | *Sarkidiornis melanotos* | Anatidae | Least Concern |
| 5 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 6 | Northern Shoveler | *Anas clypeata* | Anatidae | Least Concern |
| 7 | Northern Pintail | *Anas acuta* | Anatidae | Least Concern |
| 8 | Garganey | *Anas querquedula* | Anatidae | Least Concern |
| 9 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 10 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 11 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 12 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 13 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 14 | Eurasian Spoonbill | *Platalea leucorodia* | Threskiornithidae | Least Concern |
| 15 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 16 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 17 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 18 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 19 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 20 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 21 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 22 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 23 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 24 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 25 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 26 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 27 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 28 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 29 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 30 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 31 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 32 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 33 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 34 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 35 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 36 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 37 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 38 | Indian Nightjar | *Caprimulgus asiaticus* | Caprimulgidae | Least Concern |
| 39 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 40 | Common Hoopoe | *Upupa epops* | Upupidae | Least Concern |
| 41 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 42 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 43 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 44 | Indian Paradise-flycatcher | *Terpsiphone paradisi* | Monarchidae | Least Concern |
| 45 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 46 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 47 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 48 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 49 | Zitting Cisticola | *Cisticola juncidis* | Cisticolidae | Least Concern |
| 50 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 51 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 52 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 53 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 54 | Rosy Starling | *Pastor roseus* | Sturnidae | Least Concern |
| 55 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 56 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 57 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 58 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

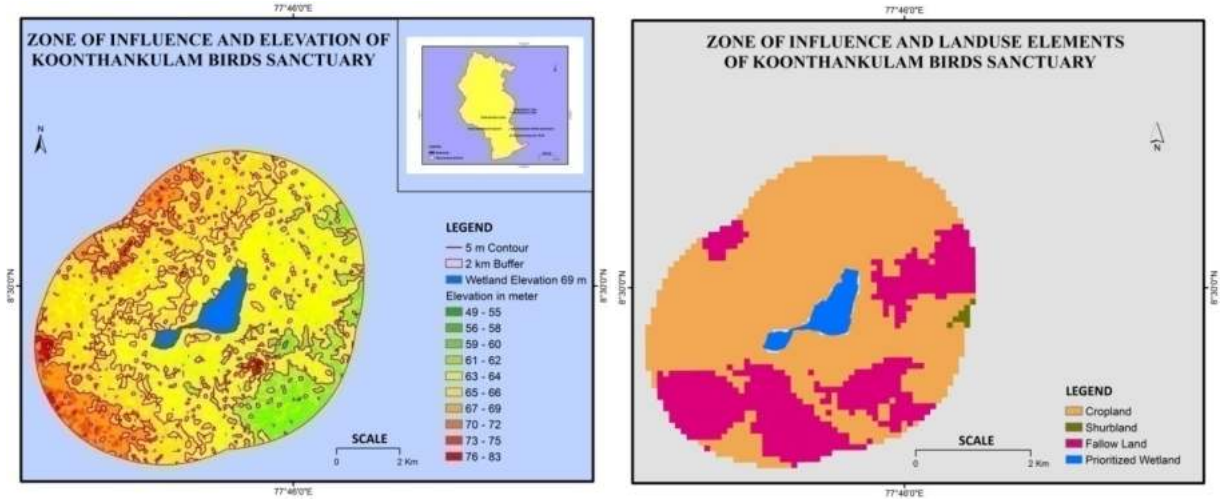
Table 26.6h: List of Mammals recorded along the Koonthakulam Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 26.4: Comparative Google imagery for Koonthakulam Bird Sanctuary.**




**Map 26.5: The zone of influence around the Koonthakulam Bird Sanctuary.**



**Melakulam Lake**

**Lake Survey Number:** 488

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as either Ariyakulam lake or Melakulam Lake or Ariyakulam Kanmai (Plate 60).

1.2 Villages that surround the wetland include Ariyskulam, Melakulam, Uttharamapandiyankulam, Tharkkariyakulam.

1.3 & 1.4 The lake is based in Tirunelveli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 43'20.7" N; 08° 48'26.0" N; 08° 43'44.0" N; and Longitude: 077° 47'54.4" E; 077° 47'56.4" E; 077° 48'02.7" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Ramanathapuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 34.3 hectares (Map 26.6).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category intermittent seasonal tank.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is -41 to 47 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and the Palayankalvai channel connecting the Thambraparani River.

b) The water in the wetland is intermitent nature with some water present only for a few months following the rains, as the wetland is mostly dependant on the rainfall and runoff waters and the Thambraparani River, during our visit the wetland had some water. However the locals informed about the periodic release of water into the tank making the wetland a more permanent feature.

c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the Nachikulam pond.

d) The pH of the water was 7.2.

e) The lake has fresh water as the salinity was 0.138 ppt.

f) The wetland banks were completely dry and the aquatic vegetation like *Ipomoea* sp. and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Madurai was 25.8 mm.

b) The atmospheric temperature was 26.3 °C.

2.7 The area of zone of influence is 1790.75 hectares and varies between 0.01 to 0.86 kms (Map 26.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/scrubland 0%; |
| Agricultural lands 90 %; | Settlements (rural) 10 %; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2004 and 2017 is given in Map 26.6 & 26.7.

**Section III- Biodiversity**

3.1 List of Plant species: 38 species of plants were recorded around the wetland during our visit (Table 26.7).

3.2 List of animal species: 78 animal species including 3 domestic species were recorded during the survey (Table 26.8a-g).

3.3 Species of Conservation importance: Three Threatened species of birds and one fish specie were observed during the survey (Table 26.4a-g).

3.4 Major Plant invasive alien species and extent of invasion: Six invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion : no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland using the wetland water and borewell water.

4.3 Fishery is not undertaken on a regular basis.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is runoff form the surrounding area mostly the agricultural lands during the rains.

4.10 The wetland has the some large temples as well as a few small temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing through the wetland.

4.11 The site is used majorly by the locals for grazing their cattle and goats.

4.12 There are agriculture activities within the wetland along the edges.

4.13 The wetland still provides a suitable habitat for terrestrial and water birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

4.15 Around the wetland there is no encroachment but solid waste dumping was observed on a minor scale. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 There is agriculture all around the wetland.

5.4 Grazing by the cattle and sheep is undertaken.

5.5 There is withdrawal of water for agriculture purpose.

5.6 The wetland has faced drought for the past 5 years.

5.7 The locals are well aware of the importance of the wetland however the scanty rains and the lack of water in the wetland was disturbing.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The wetland has been facing drought conditon for the past 5 years

6.3 There is a good incursion of invasive species that is changing the wetland structure.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Ariyakulam Lake**


Collar N.J., Andreev A.V., Chan S., Subramanya S., Tobias J. A., Rudyanto. and Crosby M.J. (2001) Spot-billed pelican (*Pelecanus philippensis*) Threatened birds of Asia, Birdlife International (2001) Threatened birds of Asia: the Birdlife International Red Data Book. Cambridge, UK: Birdlife International, Page 68-103, ISBN 0 946888 442.

Kannan V. and Ranjit Manakadan. (2005) The status and distribution of Spot-billed Pelican *Pelecanus philippensis* in Southern India. *Forktail.* 21: 9–14.

Subramanya S. (2005) Heronries of Tamil Nadu. *Indian Birds.* 1(6): 125-148.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532


Table 26.7. List of Plant species recorded along the Melakulam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 6 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Abrus precatorius* | Crab's eye,Jequirity | Gundumani | Fabaceae | Native | NA |
| 9 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 10 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 11 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 15 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 16 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 17 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 18 | *Marsdenia volubilis* | Sneeze Wort, Cotton milk plant | Kotippalai | Apocynaceae | Native | NA |
| 19 | *Evolvulus alsinoides* | Dwarf morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 20 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 21 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 22 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 23 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 24 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 25 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 26 | *Achyranthes aspera* | Prickly Chaff Flower | Nayuruvi | Amaranthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 27 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 28 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 29 | *Celosia argentea* | Plumed cockscomb | makilikkeerai, | Amaranthaceae | Native | NA |
| 30 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 31 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 32 | *Commelina benghalensis* | Bengal Dayflower | Adutinnathalai | Commelinaceae | Native | LC |
| 33 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, | Arecaceae | Native | NA |
| 34 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 35 | *Aponogeton natans* | Floating Lace Plant | Kotti, | Aponogetonaceae | Native | LC |
| 36 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 37 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 38 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.8a: List of Insects&Arachnida recorded along the Melakulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Short horned Grasshopper | *Acrida exaltata* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 5 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 26.8b: List of Butterflies recorded along the Melakulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Rice Swift | *Borbo cinnara* | Hesperiinae | Common |
| 2 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 5 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 8 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 9 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 10 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 11 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 14 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 15 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 16 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 26.8c: List of Dragonflies recorded along the Melakulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 26.8d: List of fishes recorded form the Melakulam Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.8e: List of Reptile recorded along the Melakulam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 26.8f: List of Birds recorded along the MelakulamLake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 5 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 8 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 9 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 10 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 11 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 12 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 13 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 14 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 15 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 16 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 17 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 18 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 19 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 20 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 21 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 22 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 23 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 24 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 25 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 26 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 27 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 28 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 29 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 30 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 31 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 32 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 33 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 34 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 35 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 36 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 37 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

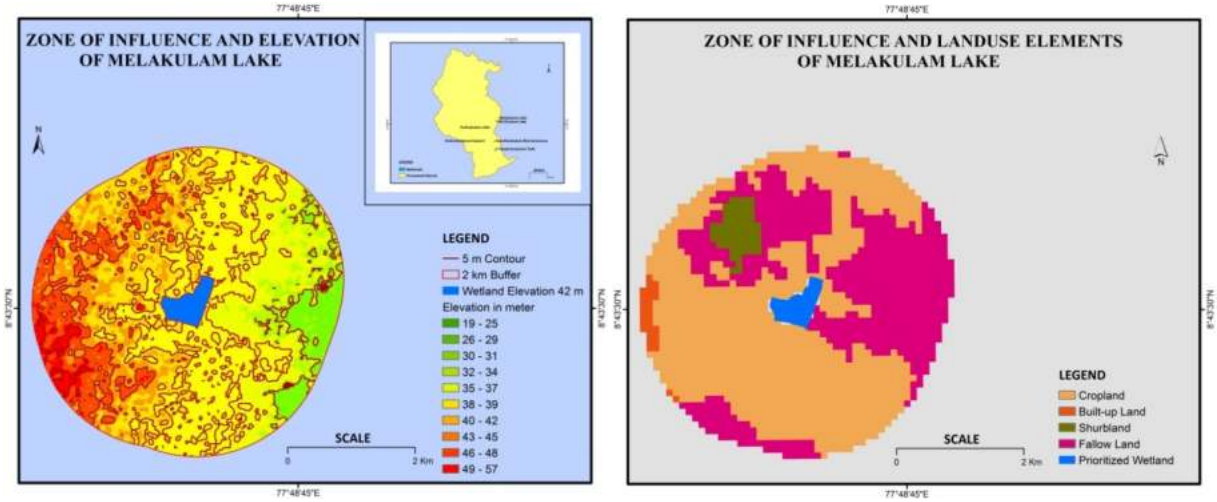
Table 26.8g: List of Mammals recorded along the Melakulam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 26.6: Comparative Google imagery for Melakulam Lake**




**Map 26.7: The zone of influence around the Melakulam lake.**



**Puthukulam Lake**

**Lake Survey Number:** 03.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Puthukulam, Puthakulam kanmai Lake (Plate 60).

1.2 Villages that surround the wetland include Puthukulam, Konganthanparai, Malakulam.

1.3 & 1.4 The lake is based in Tirunelveli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 38'20.1" N; 08° 38'09.9" N; 08° 38'05.5" N; 8° 37'50.4" N and Longitude: 077° 43'23.8" E; 077° 43'19.3" E; 077° 43'18.3" E; 077° 43'14.3" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Tirunelveli division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 63.9 hectares (Map 26.8).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 55 to 62 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and the channel connecting the Manimuthar Dam and the Pachara River.

b) The water in the wetland is intermitent nature with some water present only for a few weeks during the rains, as the wetland is mostly dependant on the rainfall and runoff waters and the Manimuthar Dam and Pachara River, during our visit the wetland has some volume of water.

c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.

d) The pH of the water was 7.2.

e) The lake has fresh water as the salinity was 0.120 ppt.

f) The wetland has some water and the aquatic vegetation like Ipomoea and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Tirunelveli was 25.8 mm.

b) The atmospheric temperature was 24°C.

2.7 The area of zone of influence is 2110.02 hectares with a fixed buffer area of 2 kms around the wetland (Map 26.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10 %; |
| Agricultural lands 75 %; | Settlements (rural) 15%; |
| Settlements (urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2003 and 2017 is given in Map 26.8 & 26.9.

**Section III- Biodiversity**

3.1 List of Plant species: 49 species of plants were recorded around the wetland during our visit (Table 26.9).

3.2 List of animal species: 98 animal species including 3 domestic species were recorded during the survey (Table 26.10a-h).

3.3 Species of Conservation importance: Four Threatened species of birds and one fish specie were observed during the survey (Table 26.10a-h).

3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The municipal corporation provides drinking water form the Tambraparani River as well as borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 There are farmlands where agriculture is undertaken around the wetland using borewell as well as wetland water.

4.3 Fishery is controlled by the PWD during the monsoon season.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is runoff form the surrounding area during the monsoon season only.

4.10 The wetland has a few temples and churches along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing throught he wetland.

4.11 The site is Majorly used by the locals for seasonal agriculture and grazing their cattle and goats.

4.12 There is agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few local and migratory bird species during our survey.

4.14 The wetland supports local fish species when water is present and is controlled by the PWD.

4.15 Around the wetland we observed encroachment and solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken based on permits.

5.2 There is agriculture undertaken within the wetland.

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle and sheep is undertaken.

5.5 There is withdrawal of water for agriculture purpose.

5.6 The wetland receives seasonal rains, and water form the dam and River overflow.

5.7 The locals are well aware of the importance of the wetland however the scanty rains and the lack of water in the wetland was disturbing.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The wetland has been facing a water scarcity condition for the past 5 years.

**Section VII Notificaion Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a water scarcity gradually changing the wetland character, solid waste dumping and sewage release is also impacting the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Puthukulam Lake**

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532

Table 26.9. List of Plant species recorded along the Puthukulam Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 4 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 5 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Crotalaria fysonii* | Fyson's Rattlepod | --- | Fabaceae | Native | LC |
| 11 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 15 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 16 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 17 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 18 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 19 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 20 | *Trianthema portulacastrum* | Desert Horse Purslane | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 21 | *Emilia sonchifolia* | Purple Sow Thistle | Muyalchevi | Asteraceae | Native | NA |
| 22 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 23 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 24 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 25 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 26 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 27 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 28 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 29 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 30 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 31 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 32 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 33 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 34 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 35 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 36 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 37 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 38 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 39 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 40 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 41 | *Jatropha curcas* | Psychic Nut | Kaattuamanakku, Katukottai | Euphorbiaceae | Invasive | NA |
| 42 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 43 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 44 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 45 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 46 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 47 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 48 | *Sporobolus tenuissimus* | | | Poaceae | Introduced | |
| 49 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.10a: List of Insects recorded along the Puthukulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 26.10b: List of Butterflies recorded along the Puthukulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 6 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 12 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 13 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 26.10c: List of Dragonflies recorded along the Puthukulam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 26.10d: List of Arachnida recorded along the Puthukulam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 26.10e: List of Fish recorded form the Puthukulam Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |

| | | | | | |
|---|---|---|---|---|---|
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.10f: List of Reptile recorded along the Puthukulam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake Skink | *Lygosoma punctatus* | Scincidae | Least Concern |

Table 26.10g: List of Birds recorded along the Puthukulam Lake

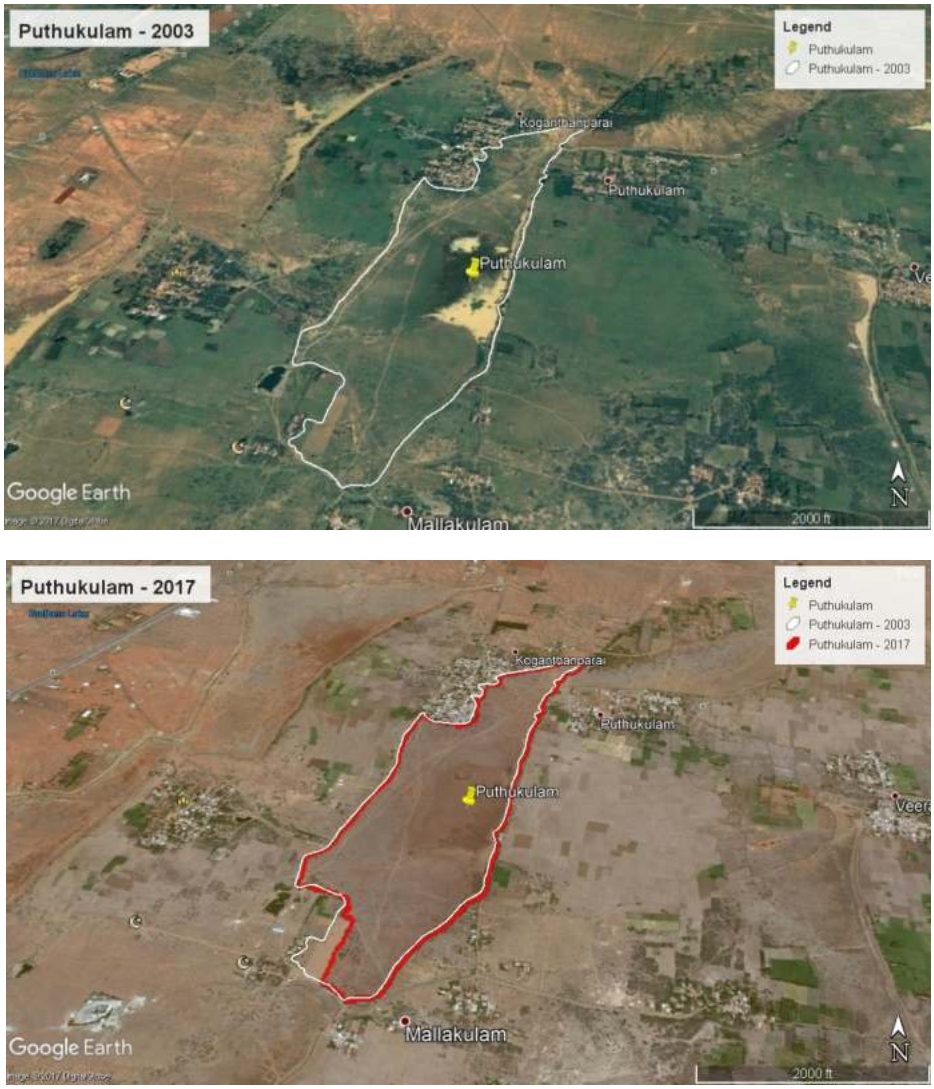
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 3 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 4 | Knob-billed Duck | *Sarkidiornis melanotos* | Anatidae | Least Concern |
| 5 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 6 | Garganey | *Anas querquedula* | Anatidae | Least Concern |
| 7 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 8 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 9 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 10 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 11 | Red-naped Ibis | *Pseudibis papillosa* | Threskiornithidae | Least Concern |
| 12 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 13 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 14 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 15 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 16 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 17 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 18 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 19 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 20 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 21 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 22 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 23 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 24 | Pallid Harrier | *Circus macrourus* | Accipitridae | Near Threatened |
| 25 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 26 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 27 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 28 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 29 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 30 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 31 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 32 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 33 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 34 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 35 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 36 | Spotted Owlet | *Athene brama* | Strigidae | Least Concern |
| 37 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 38 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 39 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 40 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 41 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 42 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 43 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 44 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 45 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 46 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 47 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 48 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 49 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 50 | Hume's Whitethroat | *Sylvia althaea* | Sylviidae | Least Concern |
| 51 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 52 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 53 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 54 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 55 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 56 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 57 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

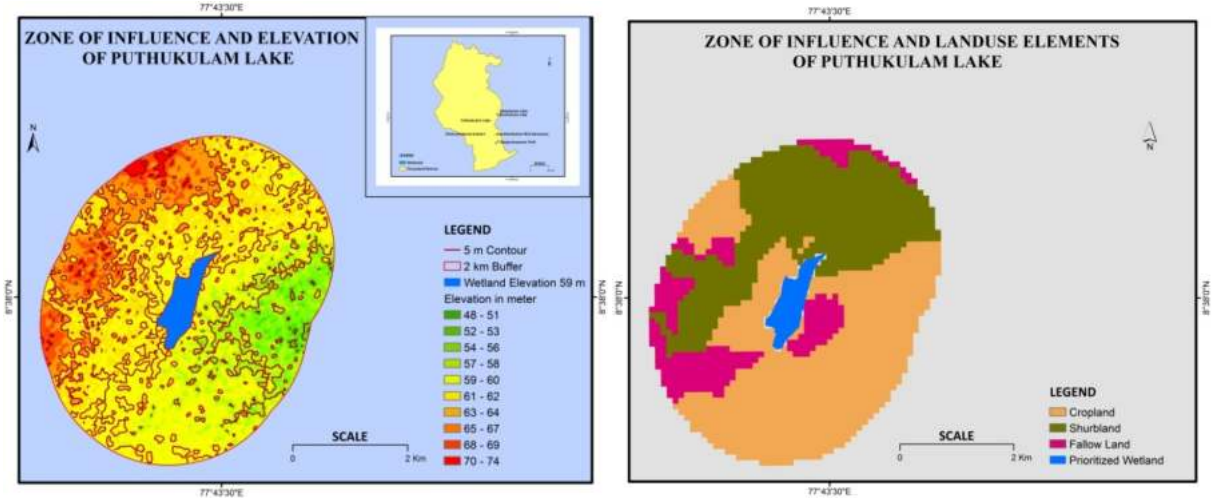
Table 26.10h: List of Mammals recorded along the Puthukulam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 26.8: Comparative Google imagery for Puthukulam Lake**




**Map 26.9: The zone of influence around the Puthukulam Lake**



**V. M. Chatram Lake**

V M Chatram lake was adjacent to the National Highway this wetland that was suggested for conservation during 2005, has experienced major land use changes and degredation. The wetland is now divided by the four lane Highway and dumping of solid waste and rubble used in the construction of the highway and flyover.

**Lake Survey Number**: Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as V M Chatram Lake (Plate 61).
1.2 Villages that surround the wetland include V M Chatram, Maharaja Nagar, Srinivasa Nagar.
1.3 & 1.4 The lake is based in Tirunelveli District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 08° 42'17.2" N; 08° 42'13.6" N; 08° 42'14.9" N; 08° 42'17.4" N; and Longitude: 077° 45'57.3" E; 077° 45'57.9" E; 077° 47'59.40" E; 077° 45'59.0" E;
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of Village Panchayat.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 32.6 hectares (Map 26.10).
2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category seasonal intermittent lake.
2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.
2.4 The elevation of the wetland is 53 to 54 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area.
   b) The water in the wetland is mostly of intermittent nature with now frequent occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters. The outflow replenishes the nearby ponds and pools.
   c) The water also helps in the replenishing the groundwater..
   d) The pH of the water was form 6.8 to 7.2.
   e) The lake has fresh water as the salinity was 0.317 ppt.
   f) The wetland was observed to have maximum terrestrial vegetation along with the aquatic vegetation.
2.6 Climatic setting
   a) Rainfall for the month of December in Madurai was 25.8 mm.
   b) The atmospheric temperature was 26°C
2.7 The area of zone of influence is 1842.57 hectares with a fixed buffer area of 2 kms around the wetland kms (Map 26.11).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 10%; |
| Agriculture 10%; | Settlements (Rural) 80%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2003 and 2017 is given in Map 26.10 & 26.11.

**Section III- Biodiversity**

3.1 List of Plant species: 34 species of plants were recorded around the wetland during our visit (Table 26.11).
3.2 List of animal species: 76 animal species including 3 domestic species were recorded during the survey (Table 26.12a-h).

3.3 Species of Conservation importance: One near Threatened specie of birds and one fish specie were observed during the survey (Table 26.14a-h).
3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is very minimal and undertaken around the wetland and the wetland and ground water is used for irrigation.
4.3 Fishery is not undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The National highway has bifurcated the wetland into two parts since the past 10 years.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland does not have temples and other religious institutions along its bank, no other cultural activity is organized around the wetland.
4.11 The wetland is used by locals for dumping solid waste into the water only.
4.12 There is agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports some diversity of fishery although the commercial fishery is not practiced.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of ground water for agricultureon a very small scale.
5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does n show major change in the pattern of water inflow and outflow.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 There is no organized fishing activity.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has some amount of solid waste dumping and encroachment activities. The siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

Thewetland does not receive any protection and conservation and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chanel should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for V.M. Chatram Lake

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532

Table 26.11: List of Plant species recorded along the V.M. Chatram Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 11 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 12 | *Xanthium strumarium* | Common Cocklebur | Ottarachedi | Asteraceae | Native | NA |
| 13 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 14 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 15 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 16 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 17 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 18 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 19 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 20 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 21 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 22 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 23 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 24 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 25 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 26 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 27 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 28 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 29 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 30 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 31 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 32 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |
| 33 | *Enteropogon dolichostachyus* | Finger grass | | Poaceae | Native | NA |
| 34 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.12a: List of Insects recorded along the V.M. Chatram Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Grasshopper species | *Chrotogonus trachypterus* | Pyrgomorphidae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Indian Papper Wasp | *Ropalidia marginata* | Vespidae |
| 7 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 26.12b: List of Butterflies recorded along the V.M. Chatram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 8 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 9 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 10 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 11 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 14 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 15 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 16 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 17 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 26.12c: List of Dragonflies recorded along the V.M. Chatram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Rufous-Backed Marsh Hawk | *Brachydiplax chalybea* | Libellulidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |
| 9 | Black Marsh Trotter | *Tramea limbata* | Libellulidae | Common |

Table 26.12d: List of Arachnida recorded along the V.M. Chatram Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 26.12e: List of fishes recorded form the V.M. Chatram Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 6 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 7 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.12f: List of Reptile recorded along the V.M. Chatram Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 26.12g: List of Birds recorded along the V.M. Chatram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 10 | Booted Eagle | *Hieraaetus pennatus* | Accipitridae | Least Concern |
| 11 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 12 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 13 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 14 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 15 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 16 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 17 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 18 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 19 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 22 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 23 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 24 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 25 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 26 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 27 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 28 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 29 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

Table 26.12h: List of Mammals recorded along the V.M. Chatram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

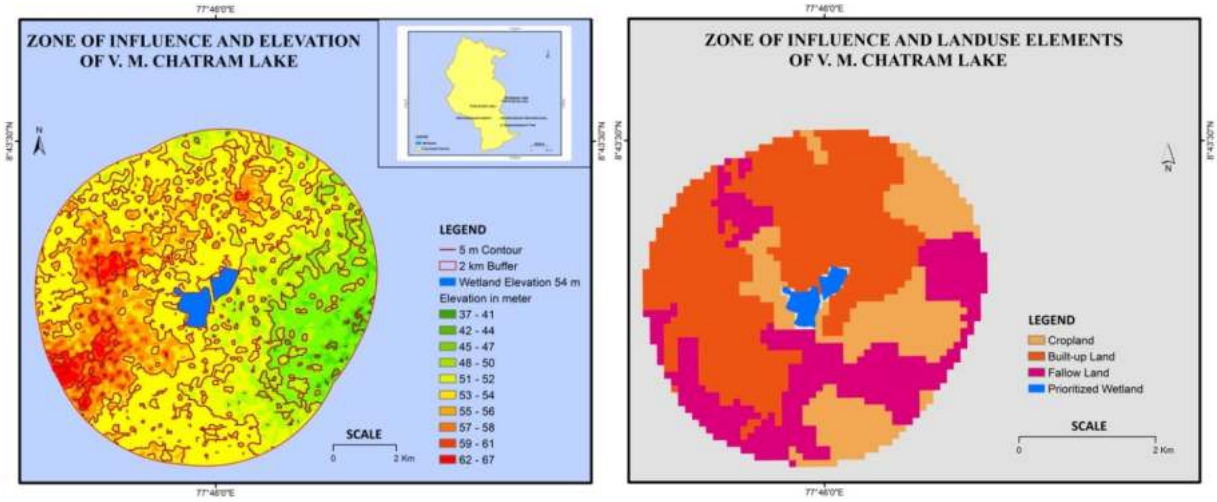
**Map 26.10: Comparative Google imagery for V.M. Chatram Lake**







**Map 26.11: The zone of influence around the V.M. Chatram lake.**



**Vijayanarayanan Tank**

**Lake Survey Number:** 3081

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Vijayanarayanan tank (Plate 61).

1.2 Villages that surround the wetland include South Vijayanarayanan Puram, Sevandhiyapuram, Rajagopalapuram, Ezhangal and North Vijayanarayana puram.

1.3 & 1.4 The lake is based in Nanguneri taluk in Tirunelveli District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 08° 24'25.7" N; 08° 24'28.7" N; 08° 24'51.0" N; 08° 24'59.9" N; and Longitude: 077° 45'26.2" E; 077° 46'08.2" E; 077° 46'46.2" E 077° 46'53.7" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 512 hectares (Map 26.12).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal tank.

2.3 Based on the secondary information the average depth is 5.5 meters for the wetland.

2.4 The elevation of the wetland is 56 to 62 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and the Manimudhara dam on the Thambraparani River and the Karumani yaru.

b) The water in the wetland is intermitent nature with some water present only for a few months following the rains, as the wetland is mostly dependant on the rainfall and runoff waters and the Thambraparani River, during our visit the wetland had some water.

c) The water form the wetlands helps in replenishing the groundwater and the overflow feeds the Thamraparani River.

d) The pH of the water was 9.2.

e) The lake has fresh water as the salinity was 0.141 ppt.

f) The wetland banks were completely dry and *Prosopis sp., Ipomoea sp*. and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January 2018 in Madurai was 25.8 mm.

b) The atmospheric temperature was form 33.1 to 32.9 °C. and the humidity was form 54 to 55%.

2.7 The area of zone of influence is 3842.57 hectares with a fixed buffer area of 2 kms around the wetland (Map 26.13).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/scrubland 0%; |
| Agricultural lands 80 %; | Settlements (rural) 20 %; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 26.12 & 26.13).

**Section III- Biodiversity**

3.1 List of Plant species: 52 species of plants were recorded around the wetland during our visit (Table 26.13).

3.2 List of animal species: 55 animal species including 3 domestic species were recorded during the survey (Table 26.14a-g).

3.3 Species of Conservation importance: Two Threatened species of birds and one fish specie were observed during the survey (Table 26.14a-g).

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Accacia nilotica indica* and *Ipomoea sp* .formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The locals use the borewells and the municipal corporation provides drinking water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland using the wetland water and borewell water.

4.3 Fishery is not undertaken on a regular basis only when the water is present. The PWD adds the fish seeds. The fishing is done on tender basis.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is runoff form the surrounding area mostly the agricultural lands during the rains.

4.10 The wetland has the some large temples as well as a few small temples along its bank and major cultural and religious activities are performed in the wetland when water is present.

4.11 The site is used majorly by the locals for grazing their cattle and goats.

4.12 There are no agriculture activities within the wetland but only along the edges.

4.13 The wetland still provides a suitable habitat for terrestrial and water birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

4.15 Around the wetland there is encroachment observed along with solid waste dumping was observed on a minor scale. There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken when water is available.

5.2 Agriculture is not undertaken within the wetland.

5.3 There is agriculture all around the wetland.

5.4 Grazing by the cattle and sheep is undertaken.

5.5 There is withdrawal of water for agriculture purpose.

5.6 The locals are well aware of the importance of the wetland however, the scanty rains and the lack of water in the wetland was disturbing.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The wetland has been facing the sewage problems with the growing number of industries.

6.3 There is a good incursion of invasive species that is changing the wetland structure.

6.4 Periodic hunting of birds is undertaken in the wetland, we witnessed two individuals firing gunshots on the opposite bank during our survey.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form bird hunting.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Overgrazing inside the wetland needs to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for**

Abhisheka K, Patrick David J, Prashanth M B, Seshadri K S and Ganesh T. (2013) First detailed survey of waterbirds in Tirunelveli and Tuticorin districts, Tamil Nadu, India. *Journal of Threatened Taxa.* 5(12), 1-15.

Janani L. (Mar. 23, 2018) Lingaraja Venkatesh (Mar. 9, 2017) Am Amsa (Dec. 14, 2017) ebirdchecklist. (ebird.org/hotspot/L4718231?yr=all&m=&rank=mrec)

TNN (Feb 9, 2018) 45 species spotted in bird census in Tirunelveli district. Madurai News - Times of India.

Table 26.13: List of Plant species recorded along the Vijayanarayanan tank

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 4 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 5 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida cordata* | Long-stalk Sida | Kurunthotti | Malvaceae | Native | NA |
| 8 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 9 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 10 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 11 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 12 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 13 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 14 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 15 | *Indigofera prostrata* | Three leaf indigo | | Fabaceae | Native | NA |
| 16 | *Peltophorum pterocarpum* | Copperpod, Peela gulmohar | konraivagai | Fabaceae | Introduced | NA |
| 17 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 18 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 19 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 20 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 21 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 22 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 23 | *Carica papaya* | Papaya Tree | Papali maram | Caricaceae | Native | DD |
| 24 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 25 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 26 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 27 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 28 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 29 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, | Asteraceae | Native | NA |
| 30 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 31 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 32 | *Tylophora indica* | Indian Ipecac, swallow-wort, | kalutai-p-palai, | Apocynaceae | Native | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | vomiting swallow-wort | naccaruppan, nay-p-palai | | | |
| 33 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 34 | *Heliotropium ellipticum* | Common Heliotrope, Potato weed, Caterpillar weed | | Heliotropiaceae | Native | |
| 35 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 36 | *Barleria cuspidata* | Spiny Barleria, lesser yellow nail dye | mancat-cemmulli, vellai-mulli | Acanthaceae | Native | |
| 37 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 38 | *Justicia tranquebariensis* | Tarangambadi Justicia | Punnaku Poodu, Mutaliyar, Niyakkiyam | Acanthaceae | Native | |
| 39 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 40 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 41 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 42 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 43 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 44 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 45 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 46 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 47 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 48 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 49 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, | Arecaceae | Native | NA |
| 50 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 51 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 52 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.14a: List of Insect species recorded along the Vijayanarayanan tank

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Bee | *Xylocopa latipes* | Apidae |

Table 26.14b: List of Butterfly species recorded along the Vijayanarayanan tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 5 | Tawny Coster | *Acraea violae* | Acraeinae | Common |

Table 26.14c: List of Odonata species recorded along the Vijayanarayanan tank

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Hooktail | *Paragomphus lineatus* | Gomphidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 26.14d: List of Fish species recorded form the Vijayanarayanan tank

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 5 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |

| | | | | | |
|---|---|---|---|---|---|
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 26.14e: List of Reptile species recorded along the Vijayanarayanan tank

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

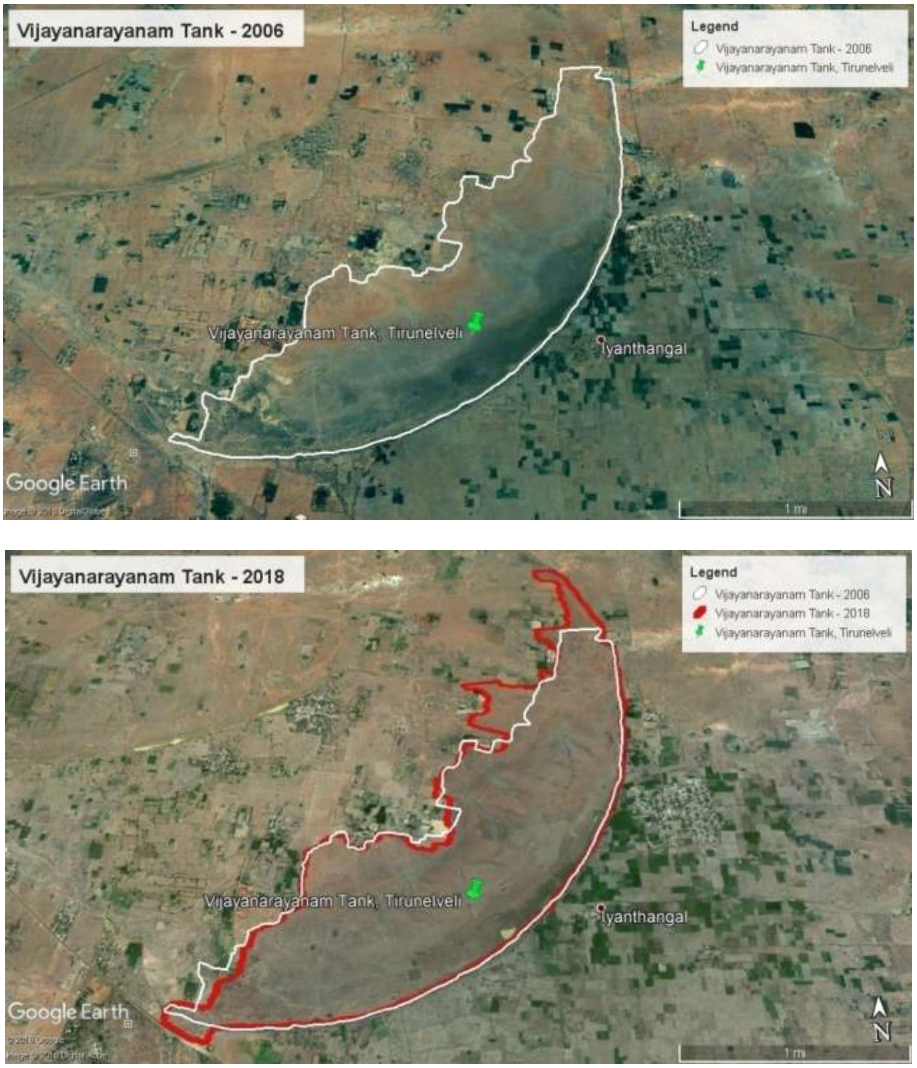
Table 26.14f: List of Bird species recorded along the Vijayanarayanan tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Knob-billed Duck | *Sarkidiornis melanotos* | Anatidae | Least Concern |
| 3 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 4 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 5 | Eurasian Spoonbill | *Platalea leucorodia* | Threskiornithidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 12 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 13 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 14 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 15 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 16 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 17 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 18 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 19 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 20 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 21 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 22 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 23 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 24 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 25 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 26 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 27 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 28 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 29 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

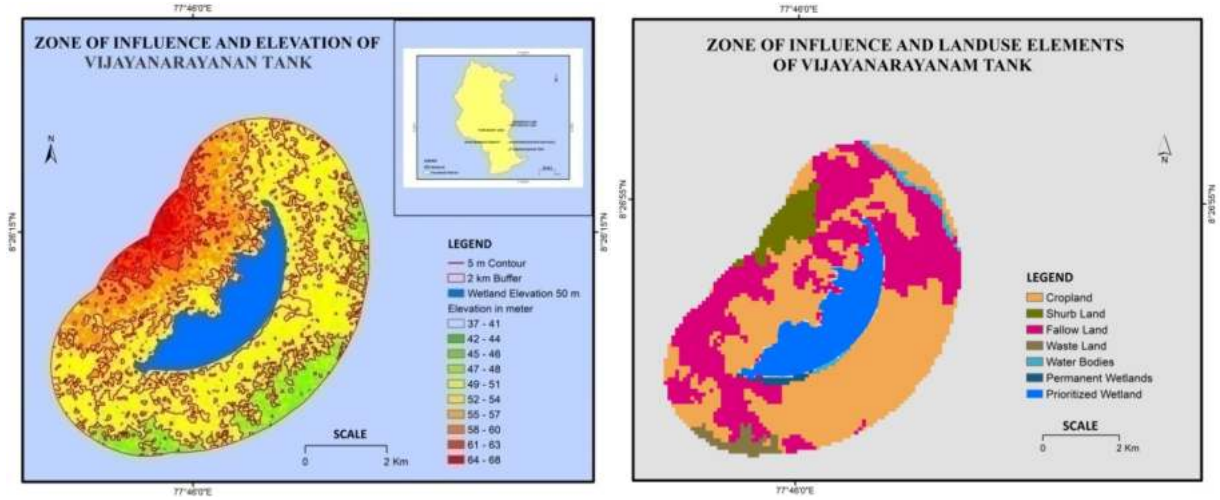
Table 26.14g: List of Mammal species recorded along the Vijayanarayanan tank

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

Map 26.12: Compartive google imagery for Vijayanarayanam Tank




Map 26.13: Zone of Influence around the Vijayanarayanam Tank



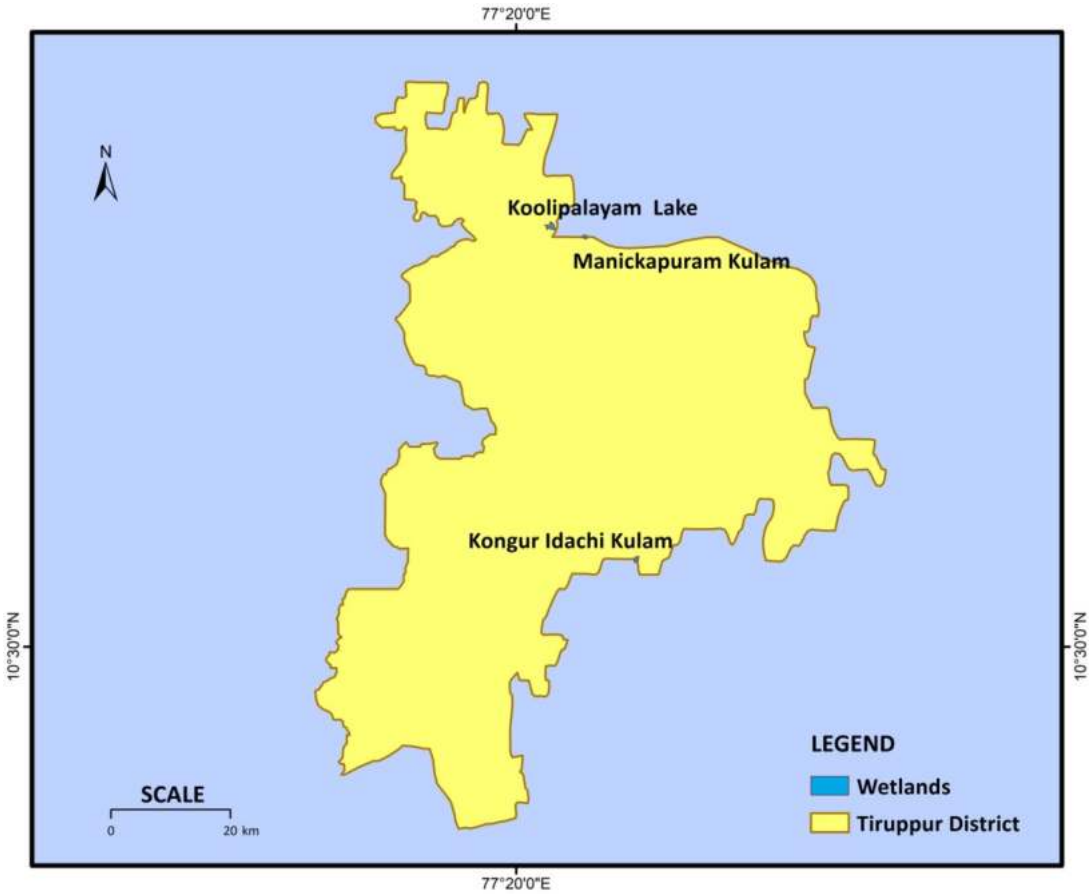
## 27. Tiruppur District

### 1. Introduction

Tiruppur District district was formed in February 2009. The district is well-developed and industrialized. Tiruppur district lies on the western part of Tamil Nadu bordering the Western Ghats and hence the district enjoys a moderate climate. The district is surrounded by Coimbatore district in the west, Erode district to the North and northeast and Karur district in the east and Dindigul district in the south east. To the south the district is surrounded by Kerala state (Idukki district).The district has an area of 516.12 square kilometers.

The major Rivers flowing through the district are Noyyal and Amaravathi. The Amaravati River is the main source of irrigation in the district. Amaravathi Dam, which created Amaravathi Reservoir, is located at Amaravathinagar. Thirumurthy dam, which is created by the PAP project, is situated in this district. Both Amaravathi dam and Thirumurthy dam are the prime source of irrigation in the district, whereas Uppaar dam is another dam which receives water form seasonal rains.

The wetland selected in the district was based on the bird diversity and the size of the wetland (Map 27.1).




**Map 27.1: Wetlands of Tirupur district assessed for Prioritization**

### Observations

Of the three wetlands selected in the district, Koolipalayam reservoir is the largest while Manickapuram Kulam is the smaller of the three wetlands. Around the three wetlands, we recorded 96 plant species both aquatic and terrestrial including 15 invasive species (Table 27.1). The faunal components totaled 154 species with the

representation of 73 bird species including the wetland birds. The field study revealed that Kongur Idachi Kulam was dry wetland the trophic status was not known however the soil characteristics were hydric changing soil structure. The other two wetlands were Mesotrophic in status (Table 27.2) and the water quality was comparatively better in Manickapuram Kulam.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Elandaikudam wetland. Mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation

1. Kongur Idachi Kulam
2. Koolipalayam Lake
3. Manickapuram Kulam

Table 27.1: The flora and fauna recorded form the wetlands of Tiruppur District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Koolipalayam Lake | 51(8) | 12 | 11 | 19 | 2 | 10 | 0 | 2 | 49 | 5 |
| 2 | Kongur Idachi Kulam | 48(10) | 3 | 2 | 9 | 1 | 3 | 0 | 1 | 16 | 3 |
| 3 | Manickapuram Kulam | 58(10) | 12 | 8 | 16 | 1 | 0 | 0 | 3 | 51 | 4 |
| | Total | 96(15) | 17 | 14 | 28 | 2 | 12 | 0 | 3 | 73 | 5 |

Table 27.2: The water and soil quality assessed form the wetlands of Tiruppur District

| District Name | Tirupur | | |
|---|---|---|---|
| Wetland Name | Manickapuram Lake | Koolipalayam Lake | Kongur Idachi Kulam |
| Wetland area(ha) | 35 | 112 | 56.7 |
| Buffer Area in Hectare (ha) | 1737.25 | 2259.52 | 1876.92 |
| Air Temperature °C | 28.7 | 28.5 | 32 |
| Water Temperature °C | 25.8 | 27.8 | |
| Humidity % | 65 | 57 | 54 |
| Nutrients in Water | Mesotrophic | Mesotrophic | not known |
| Water pH | 8.5 | 7.65 | |
| Water TDS ppm | 1940 | 1194 | |
| Water Conductivity ppm | 2760 | 1424 | |
| Light Penetration cms | 46 | 47 | |
| Water Salinity ppt | 1.41 | 0.891 | |
| DO mg/L | 12.20 | 3.05 | |
| PO4P mg/L | 0.022 | 1.153 | |
| Water Na ppm | 287 | 204 | |
| Water K ppm | 22.1 | 20.43 | |
| Water Li ppm | 0.4 | 0.4 | |
| Water Ca ppm | 92.35 | 51.6 | |
| Soil Colour code | 7.5 YR 4/3 | 10YR 4/3 | 2.5YR 4/4 |
| Soil Colour | Brown | Brown | Reddish Brown |
| Soil pH | 7.37 | 7.3 | 7.72 |
| Soil TDS ppm | 380 | 500 | 277 |
| Soil Conductivity ppm | 535 | 703 | 390 |
| Soil Salinity ppt | 0.258 | 0.343 | 0.188 |
| Soil Na ppm | 51.2 | 41.7 | 12.4 |
| Soil K ppm | 7.5 | 12.8 | 8.1 |
| Soil Li ppm | 0.1 | 0.2 | 0.1 |
| Soil Ca ppm | 28.6 | 42.9 | 28.4 |

**Kongur Idachi Kulam**

**Lake Survey Number:** 338

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kongur Idachi kulam (Plate 62).

1.2 Villages that surround the wetland include Kuppannavalasu, Karuppaiyavalasu and Pommayanallur.

1.3 & 1.4 The lake is based in Dharapuram taluka in Tirupur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 37'44.7" N; 10° 37'41.0" N; and Longitude: 077° 30'39.8" E; 077° 30'41.4" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 56.7 hectares (Map 27.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermittent tank.

2.3 Based on the secondary information the average depth is 1.5 to 2 meters for the wetland.

2.4 The elevation of the wetland is 264 to 271 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area. It receives water form Sanmuganathi River canal and the overflow joins the Noyyal River.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater.
d) The pH of the water was not determined as the wetland was dry.
e) The wetland was dry at the time of sampling and hence salinity of the lake water was not estimated.
f) The wetland had no aquatic vegetation while *Prosopis juliflora* and other weeds dominated the landscape i.e 70%.

2.6 Climatic setting

a) Rainfall for the month of July 2018 in Tiruppur was 19.3 mm.
b) The atmospheric temperature was 32°C and the humidity was 54 %.

2.7 The area of zone of influence is 1876.92 hectares and varies between 0.04 to 0.77 kms (Map 27.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 95%; | Settlements (rural) 05%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2007 and 2018 is given in Map 27.2 & 27.3.

**Section III- Biodiversity**

3.1 List of Plant species: 45 species of plants were recorded around the wetland during our visit (Table 27.3).

3.2 List of animal species: 38 animal species including 3 domestic species were recorded during the survey (Table 27.4a-h).

3.3 Species of Conservation importance: No Threatened species were observed during the survey (Table 27.4a-h).

3.4 Major Plant invasive alien species and extent of invasion: Teninvasive plants including *Parthenium hysterophorus, Lantana camara* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Fishing is not undertaken as the wetland was dry but the fisheries department introduces the seed when the water is available annually and the fishing is undertaken by the locals.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the Amravathi River and Umbbar Dam.

4.2 The overflow water feeds the agricultural fields.

4.3 Fishery is not undertaken for commercial purpose, but some amount of recreational fishery is undertaken when water is available.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any purpose but serves as a ground water recharge and the agriculture fields as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is insignificant runoff form the surrounding area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland only when water is present.

4.11 The site adjoining the wetland is majorly used by the locals for their daily needs.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial as we also recorded few bird species during our survey.

4.14 The wetland does not support local fish species.

4.15 There is mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken commercially.

5.2 There is no agriculture undertaken within the wetland.

5.3 The locals are well aware of the importance of the wetland even when there are very minimal changes to the land use patterns.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The excess grazing in the wetland and the extraction of ground water needs to be regulated. Horticulture practices using the ground water can be a threat to the health of the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Konguridachi Kulam

Shanmugam Kalidass (Jan. 15, 2018), Subhashini Sivasubramanian (Jan. 14, 2018) and Satheesh Muthu Gopal B, (Dec. 12, 2017) ebirds Checklist. (ebird.org/hotspot/L3242693?yr=all&m=&rank=mrec)

Shaji K A and TNN (Dec. 5, 2011) A bird haven that cries for protection. (timesofindia .indiatimes.com/city/coimbatore/A-bird-haven-that-cries-for-protection /articleshow /10987149.cms)

Table27.3: List of Plant species recorded along the Kongur Idachi Kulam

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 2 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 3 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 4 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 5 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 6 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 7 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 8 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 9 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 12 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 13 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 14 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 15 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 16 | *Alangium salviifolium* | Sage leaved Alangium | Alandi | Cornaceae | Native | NA |
| 17 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 18 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 21 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 22 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 23 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 24 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 25 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 26 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 27 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 28 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 29 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai, | Nyctaginaceae | Native | NA |
| 30 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 31 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 32 | *Alternanthera philoxeroides* | Alligator Weed | | Amaranthaceae | Invasive | NA |
| 33 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 34 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 35 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 36 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 37 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 38 | *Agave americana* | Agave, Century plant | | Asparagaceae | Introduced | |
| 39 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 40 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 41 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 42 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 43 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |
| 44 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 45 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai, | Nyctaginaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 27.4a: List of Insect species recorded along the Kongur Idachi Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Cow bug | *Oxyrachis tarandus* | Membracidae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 27.4b: List of Butterfly species recorded along the Kongur Idachi Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 2 | Common Emigrant | *Catopsilia pomona* | Coliadinae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 5 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 6 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 9 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table27.4c: List of Odonata species recorded along the Kongur Idachi Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 27.4d: List of Arachnid species recorded along the Kongur Idachi Kulam

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 27.4e: List of Fish species recorded form the Kongur Idachi Kulam

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 2 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 3 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 27.4f: List of Reptile species recorded along the Kongur Idachi Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

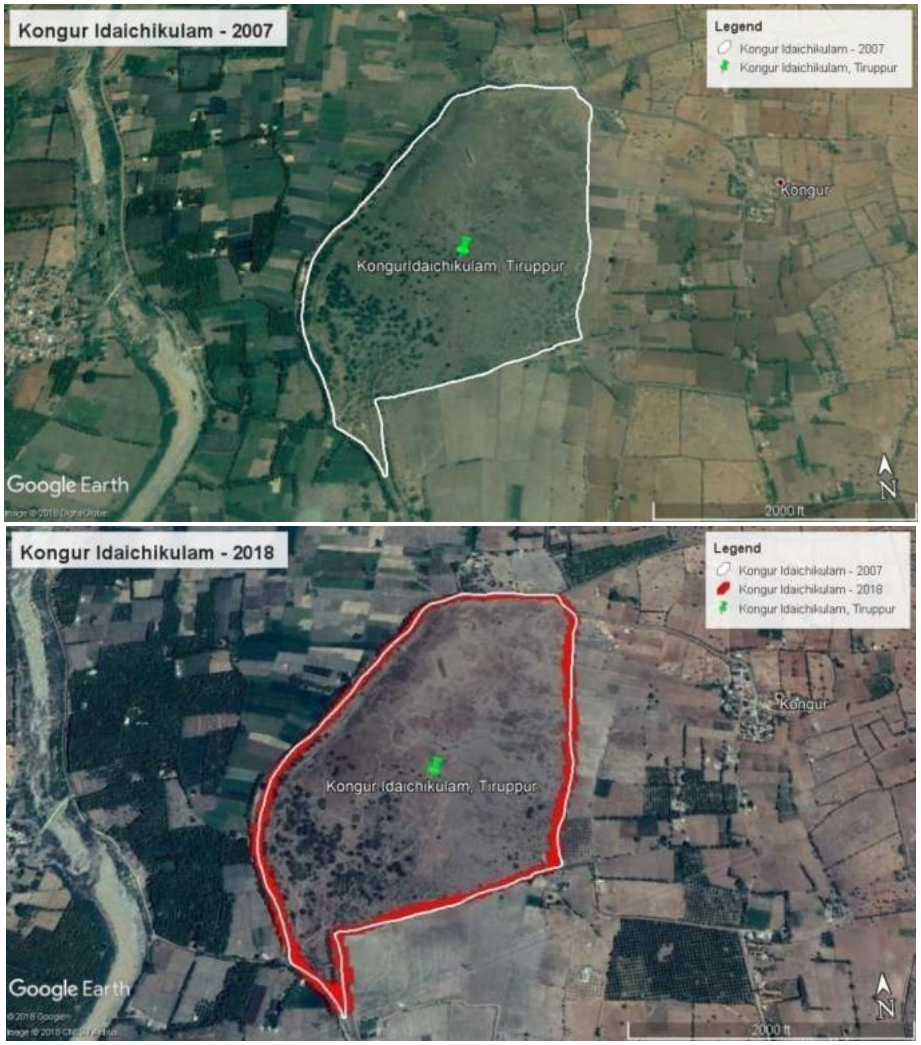
Table 27.4g: List of Bird species recorded along the Kongur Idachi Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 3 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 4 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 5 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 6 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 7 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 8 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 9 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 10 | Large Grey Babbler | *Turdoides malcolmi* | Leiothrichidae | Least Concern |
| 11 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 12 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 13 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 14 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 15 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 16 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

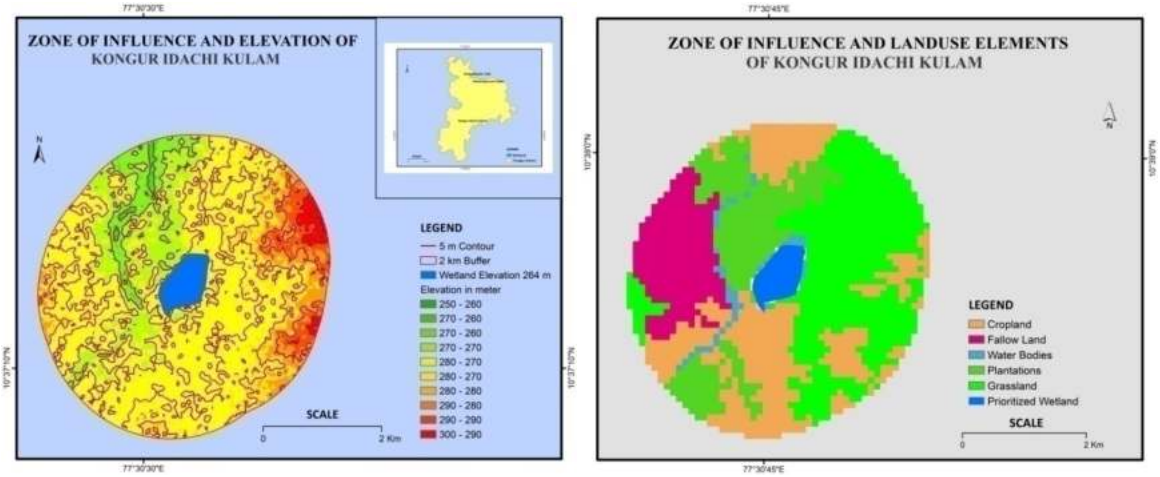
Table 27.4h: List of Mammal species recorded along the Kongur Idachi Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |

**Map 27.2: Comparative google imagery for Kongur Idachi Kulam**




**Map 27.3: Zone of Influence around the Kongur Idachi Kulam**



**Koolipalayam Lake**

**Lake Survey Number:** 1 & 443

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Koolipalayam Lake or Sarkaraperipalayam Lake, Nanjaranayakkam kulam (Plate 62).

1.2 Villages that surround the wetland include Koolipalayam, kulathupalayam, Parapalayam, Sarkaraperiyapalayam.

1.3 & 1.4 The lake is based in Tirupur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 08'26.5" N; 11° 08'17.8" N; 11° 08'15.2" N; 11° 07'47.7" N; 11° 07'47.3" N; 11° 07'50.1" N; 11° 07'47.6" N; and Longitude: 077° 23'08.9" E; 077° 23'19.8" E; 077° 23'21.9" E; 077° 23'30.6" E; 077° 23'27.0" E; 077° 23'13.3" E; 077° 22'47.8" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 112 hectares (Map 27.4).

2.2 The Wetland type - the wetland belongs to the Manmade (inland) tank category in the sub category seasonal intermitent tank.

2.3 Based on the secondary information the average depth is 4 meters for the wetland.

2.4 The elevation of the wetland is 285 to 293 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area. It receives water form Nalar River canal and the overflow joins the Noyyal River.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow joins the Noyyal River.
d) The pH of the water was form 8.3 to 8.6
e) The salinity of the lake was 0.89 ppt.
f) The wetland had vegetation like *Ipomoea, Eichornea crassipes, Prosopis Juliflora* and other weeds that dominated the landscape i.e 70%.

2.6 Climatic setting

a) Rainfall for the month of January 2018 in Tiruppur was 19.3 mm.
b) The atmospheric temperature varied between 27.2°C and 28.5 and the humidity was form 49 to 57 %.

2.7 The area of zone of influence is 2259.52 hectares with a fixed buffer area of 2 kms around the wetland (Map 27.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 70%; | Settlements (rural) 10%; |
| Settlements (Urban) 5%; | Industrial 5% |

2.9 The comparison of the wetland for the years 2012 and 2017 is given in Map 27.4 & 27.5.

**Section III- Biodiversity**

3.1 List of Plant species: 49 species of plants were recorded around the wetland during our visit (Table 27.5).

3.2 List of animal species: 110 animal species including four domestic species were recorded during the survey (Table 27.6a-h).

3.3 Species of Conservation importance: Three Threatened species of birds and two fishes were observed during the survey (Table 27.6a-h).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Prosopis juliflora*, *Eichorinea carcipess* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Fishing is not undertaken as the wetland.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose or agriculture. The municipal corporation provides drinking water form the borewell water and Bhavani Dam at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the Noyyal River.
4.3 Fishery is not undertaken for commercial purpose, but some amount of recreational fishery is undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage, release of sewage and effluents and as toilet.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetland..
5.3 The locals are well aware of the importance of the wetland and the locals are active and have even formed an NGO to work towards the betterment of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water. The dyeing industry is greatly influencing the ecological character of the wetland and the dyeing industry has to be monitored.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The polluting practices around the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further. The locals face the mosquito menace that is affecting the health of the locals this is mainly attributed to the pollution load in the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Koolipalayam Lake**


Kumar Pranaw, Priyanka Tripathi, Ramakant Sahu, Poornima Saxena, Mathur H. B, and Agarwal H. C. (2014) Pollution of surface water in Tirupur and its adjacent areas by textile effluents, *The Centre for Science and Environment (CSE) Report*, New Delhi.

Mahalakshmi M. and Saranathan E. (2014) Assessment of Water Contamination due to Dyeing and Bleaching Effluents on Noyyal River Basin, Tamil Nadu - A Review. *International Journal of ChemTech Research,* 6 (2), Pp. 1335-1340.

Mercy M. and Mary Fabiola S.R. (2016) Histological alternation in selected organs of *Oreochromis niloticus* form selected Lakes around Coimbatore District. *International Journal of Recent Scientific Research* 7(1): Pp. 8142-8146.

Mohan S., Sivakumar C.T., Tamilchelvan P., Vidhya K. and Muralimohan N. (2016) Reclamation of Nanjarayan Lake by Using Bioclean STP Treatment Tirupur Corporation in Tamil Nadu, India, *International Journal of Scientific & Engineering Research*. 7(11), Pp. 128-134.

Samuel Rajkumar A. and Nagan S. (2011) Study on Tirupur CETPs discharge and their impact on Noyyal River and Orathupalayam dam, Tamil Nadu, India, *Journal of Environmental Research and Development*, 5 (3), Pp. 558-565.


Table 27.5: List of Plant species recorded along the Koolipalayam Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Capparis grandis* | Tree Caper, Grand Caper | Thotti maram | Capparaceae | Native | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 9 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 10 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 11 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 15 | *Sesbania sesban* | Common Sesban, Egyptian Rattlepod | | Fabaceae | Native | NA |
| 16 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 17 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 18 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 19 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 20 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 21 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 22 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 23 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 24 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 25 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 26 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 27 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 28 | *Datura innoxia* | Datura | Vellammattai | Solanaceae | Invasive | NA |
| 29 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 | *Stachytarpheta jamaicensis* | Blue Porterweed | Seemai Nayuruvi | Verbenaceae | Native | NA |
| 31 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 32 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 33 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 34 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 35 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 36 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 37 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 38 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 39 | *Euphorbia heterophylla* | Wild Poinsettia | | Euphorbiaceae | Naturalized | NA |
| 40 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 41 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 42 | *Holoptelea integrifolia* | Indian Elm | Aaya | Ulmaceae | Native | NA |
| 43 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 44 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 45 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 46 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 47 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 48 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 49 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table27.6a: List of Insects recorded along the Koolipalayam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Cow bug | *Oxyrachis tarandus* | Membracidae |
| 6 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 7 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 8 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 9 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 10 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 11 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 12 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table27.6b: List of Butterflies recorded along the Koolipalayam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 8 | Dark Grass Blue | *Zizeeria karsandra* | Polyommatinae | Common |
| 9 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 10 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 11 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 12 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 13 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 14 | Common Crow | *Euploea core* | Danainae | Common |
| 15 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 16 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 17 | Common Castor | *Ariadne merione* | Biblidinae | Common |
| 18 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 19 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table27.6c: List of Odonates recorded along the Koolipalayam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 5 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 8 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 9 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 10 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 11 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |

Table27.6d: List of Arachnida recorded along the Koolipalayam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table27.6e: List of Fishes recorded form the Koolipalayam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 5 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 6 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table27.6f: List of Reptiles recorded along the Koolipalayam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table27.6g: List of Birds recorded along the Koolipalayam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Bar-headed Goose | *Anser indicus* | Anatidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Northern Shoveler | *Anas clypeata* | Anatidae | Least Concern |
| 4 | Garganey | *Anas querquedula* | Anatidae | Least Concern |
| 5 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 6 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 7 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 8 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 9 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 10 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 11 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 12 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 13 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 14 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 15 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 16 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 17 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 18 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 19 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 20 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 21 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 22 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 23 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 24 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 25 | Marsh Sandpiper | *Tringa stagnatilis* | Scolopacidae | Least Concern |
| 26 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 27 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 28 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 29 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 30 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 31 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 32 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 33 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 34 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 35 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 36 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 37 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 38 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 39 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 40 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 41 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 42 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 43 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 44 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 45 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 46 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 47 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 48 | Grey Wagtail | *Motacilla cinerea* | Motacillidae | Least Concern |
| 49 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

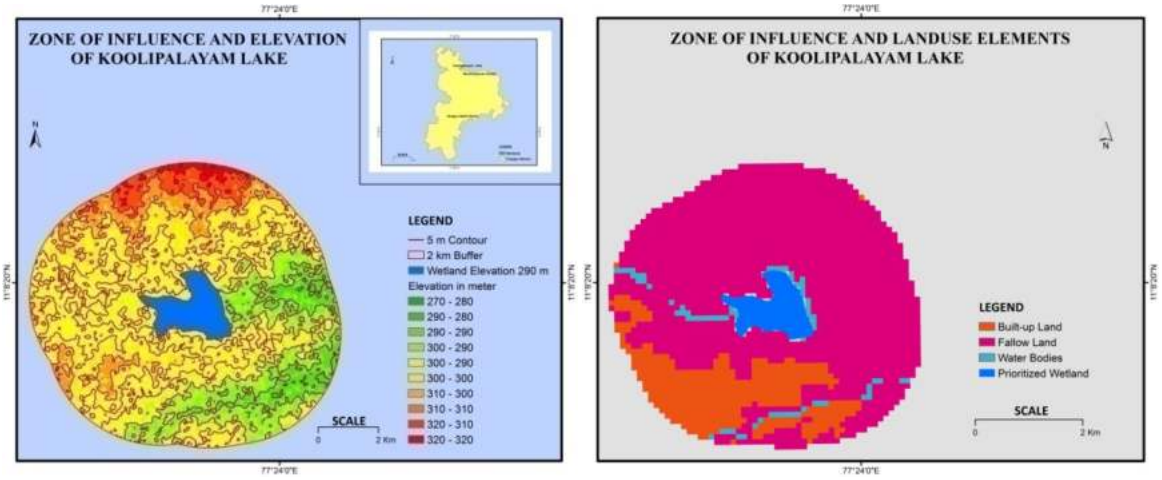
Table27.6h: List of Mammals recorded along the Koolipalayam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 4 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 27.4: Comparative Google imagery for Koolipalayam Lake**




**Map 27.5: The zone of influence around the Koolipalayam lake.**



**Manickapuram Kulam**

**Lake Survey Number:** 203, 275

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Manickapuram Lake (Plate 63) also known as Muthalipalayam.

1.2 Villages that surround the wetland include Muthalipalayam and Manikyapuram.

1.3 & 1.4 The lake is based in Tirupur taluka in Tirupur district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 07'15.7" N; 11° 07'16.4" N; 11° 07'17.3" N; 11° 07'06.3" N; 11° 07'02.1" N; and Longitude: 077° 26'00.9" E; 077° 26'05.0" E; 077° 26'17.5" E; 077° 26'24.1" E; 077° 26'25.7" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 35 hectares (Map 27.6).

2.2 The Wetland type - the wetlands belong to the Natural (inland) tank category in the sub category seasonal intermitent tank.

2.3 Based on the secondary information the average depth is 2 to 3 meters for the wetland.

2.4 The elevation of the wetland is 273 to 277 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area. It receives water form Noyyal River canal and the overflow joins the Noyyal River.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater.
d) The pH of the water was form 8.4 to 8.6.
e) The salinity of the lake water was 1.41 ppt.
f) The wetland had no aquatic vegetation while *Prosopis juliflora* and other weeds dominated the landscape i.e 70%. The wetland was mesotrophic

2.6 Climatic setting

a) Rainfall for the month of August 2018 in Tiruppur was 19.3 mm.
b) The atmospheric temperature varied between 28 to 28.7°C and the humidity was 65 %.

2.7 The area of zone of influence is 1737.25 hectares with a fixed buffer area of 2 kms around the wetland (Map 27.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 75%; | Settlements (rural) 25%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2011 and 2018 is given in Map 27.6 & 27.7.

**Section III- Biodiversity**

3.1 List of Plant species: 50 species of plants were recorded around the wetland during our visit (Table 27.7).

3.2 List of animal species: 95 animal species including 3 domestic species were recorded during the survey (Table 27.8 a-g).

3.3 Species of Conservation importance: Three Threatened species of birds were observed during the survey (Table 27.8a-g).

3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Ipomoea aquatica, Acacia nilotica, Prosopis juliflora, Parthenium hysterophorus,* and *Lantana camara* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Fishing is undertaken as the wetland the fisheries department introduces the seed when the water is available annually and the fishing is undertaken by the locals through the village panchayat tenders.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water.
4.2 The overflow water feeds the agricultural fields.
4.3 Fishery is undertaken for commercial purpose, but some amount of recreational fishery is undertaken when water is available.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge and the agriculture fields as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland only when water is present.
4.11 The site adjoining the wetland is majorly used by the locals for their daily needs.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for wetland and terrestrial birds as we also recorded few bird species nesting and roosting during our survey.
4.14 The wetland does not support local fish species.
4.15 There is mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken commercially.
5.2 There is no agriculture undertaken within the wetland.
5.3 The locals are well aware of the importance of the wetland even when there are very minimal changes to the land use patterns.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.
6.3 Sewage release and garbage dumping are the other major threats

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The excess grazing in the wetland and the extraction of ground water needs to be regulated. Horticulture practices using the ground water can be a threat to the health of the wetland.
Dumping of solid waste around the wetland should be stopped.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Manickapuram Kulam**

Rajasekaran RK, TNN (Sep. 9, 2017) Effluents pollute Noyyal, again (timesofindia. indiatimes. com/city/coimbatore/effluents-pollute-noyyal-again/ articleshow /60431695.cms)

Table 27.7: List of Plant species recorded along the Manickapuram Kulam

| S. No | Scientific Name | Common English Name | Local Hindi Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 8 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Alysicarpus vaginalis* | Alysiclover | | Fabaceae | Native | NA |
| 11 | *Caesalpinia pulcherrima* | Peacock Flower | Mayurkonrai | Fabaceae | Native | |
| 12 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 15 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 16 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 17 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 18 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 19 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 20 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 21 | *Oldenlandia corymbosa* | Diamond flower | Kattucayaver | Rubiaceae | Native | NA |
| 22 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 23 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 24 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 25 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 26 | *Gymnema sylvestre* | Cowplant | Cirukurinchchan | Apocynaceae | Native | NA |
| 27 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 28 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, | Paalai | Apocynaceae | Native | LC |
| 29 | *Evolvulus alsinoides* | Dwarf morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 30 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 31 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 32 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 33 | *Barleria buxifolia* | Box-Leaved Barleria | Kattimullu | Acanthaceae | Native | NA |
| 34 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 35 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 36 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 37 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 38 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 39 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 40 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 41 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 42 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 43 | *Euphorbia antiquorum* | Triangular Spurge | Chaturakalli, Kalli, | Euphorbiaceae | Native | |
| 44 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 45 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 46 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 47 | *Cyperus rotundus* | Common nut sedge, coco grass, | Korai, korai kilangu, | Cyperaceae | Native | LC |
| 48 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 49 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 50 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

Table 27.8a: List of Insect species recorded along the Manickapuram Kulam

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 4 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 5 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 6 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 7 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 8 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 9 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |
| 10 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 11 | Orange Spider Wasp | *Cryptocheilus bicolor* | Pompilidae |
| 12 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 27.8b: List of Butterfly species recorded along the Manickapuram Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 7 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 8 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 9 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 10 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 11 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 12 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 13 | Dark Blue Tiger | *Tirumala septentrionis* | Danainae | Common |
| 14 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 15 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 16 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 27.8c: List of Odonata species recorded along the Manickapuram Kulam

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Granite Ghost | *Bradinopyga geminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 27.8d: List of Arachnid species recorded along the Manickapuram Kulam

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 27.8e: List of Reptile species recorded along the Manickapuram Kulam

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Snake Skink | *Lygosoma punctatus* | Scincidae | Least Concern |

Table 27.8f: List of Bird species recorded along the Manickapuram Kulam

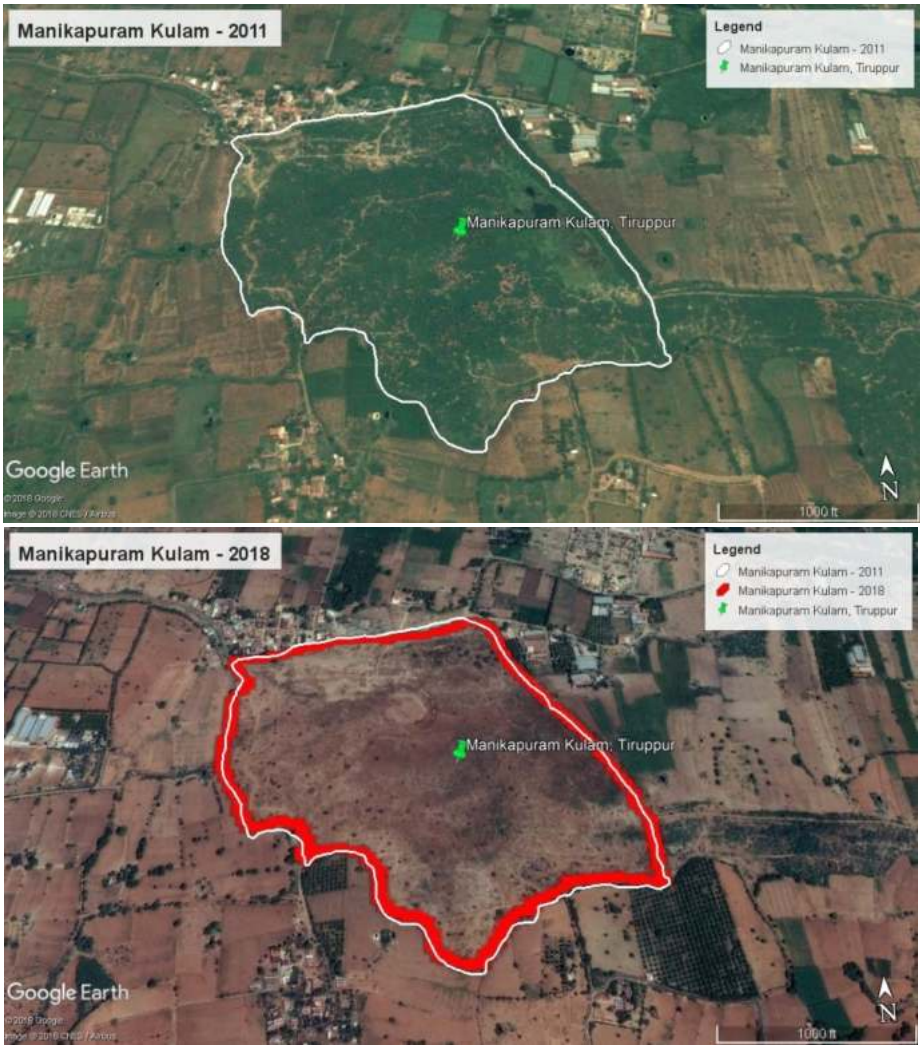
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 2 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 3 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 4 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 5 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 6 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 7 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 8 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 9 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 10 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 11 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 12 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 13 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 14 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 15 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 16 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 17 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 18 | Great Cormorant | *Phalacrocorax carbo* | Phalacrocoracidae | Least Concern |
| 19 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 20 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 21 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 22 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 23 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 24 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 25 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 26 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 27 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 28 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 29 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 30 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 31 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 32 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 33 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 34 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 35 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 36 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 37 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 38 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 39 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 40 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 41 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 42 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 43 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 44 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 45 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 46 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 47 | House Sparrow | *Passer domesticus* | Passeridae | Least Concern |
| 48 | Baya Weaver | *Ploceus philippinus* | Ploceidae | Least Concern |
| 49 | Indian Silverbill | *Euodice malabarica* | Estrildidae | Least Concern |
| 50 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |
| 51 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

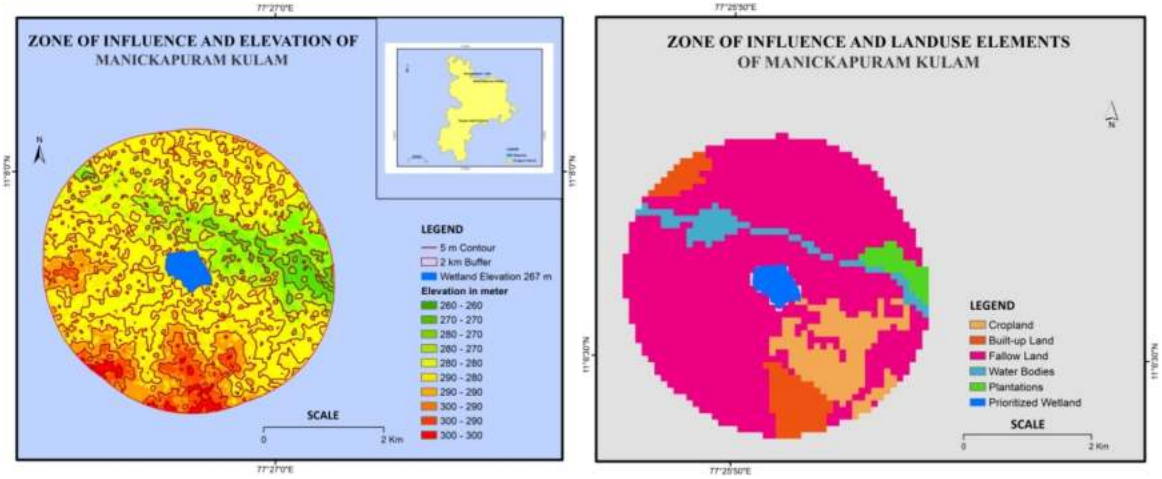
Table 27.8g: List of Mammal species recorded along the Manickapuram Kulam

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 27.6: Comparative google imagery for Manickapuram Kulam**




**Map 27.7: Zone of Influence around the Manickapuram Kulam**

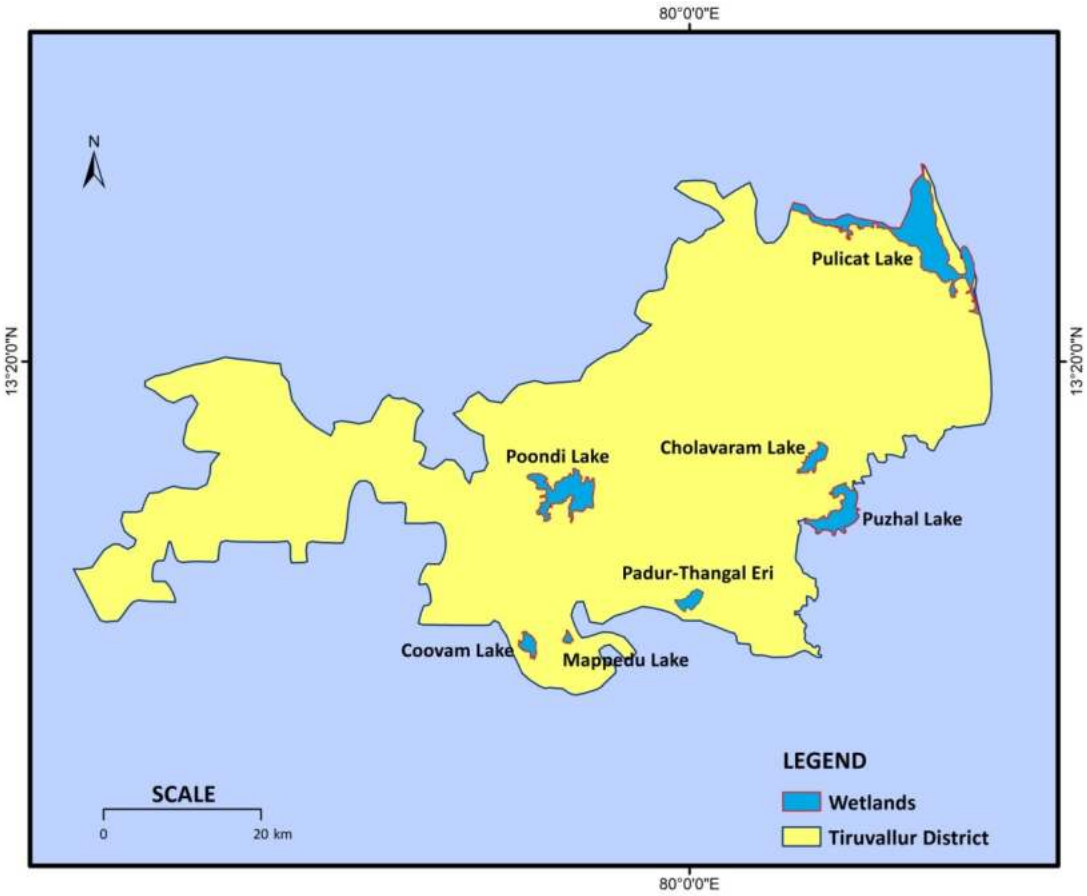


## 28. Tiruvallur District

Tiruvallur was originally known as Tiruvallur which specifies the sleeping position of the holy lord "Balaji", in the Veeraragava temple of TiruvallurHistorically, this region was under a chain of regimes commencing form the Pallavas during the 7th century ending with the Nawab of Arcot during the early part of 19th century when it came under the British rule. The district of Tiruvallur has been carved out by bifurcating erstwhile Chengalpattu district. It is boardered on the north by Andhra Pradesh state, on the east by the Bay of Bengal, on the southeast by Chennai district, on the south by Kanchipuram and on the west by Vellore district.The coastal region of the district is mostly flat and dreary; but in the other parts it is undulating and even hilly in some places. The area under forests in this district is quite meager.

Thiruvallur is one of the fast developing districts of Tamil Nadu situated near Chennai city, giving it a special industrial and commercial importance. Total geographic area of Thiruvallur is 3422 km². Total area under wetland is 53863 ha, which includes 590 small wetland (<2.25 ha). Lakes/Ponds occupy 33.54% of wetland area. The second major wetland type is Tanks/Ponds. There are 603 Tanks/Ponds with 11825 ha area (21.95%). The other wetland types are; Lagoons (14.92 %), Reservoirs (10.54 %) and River/Stream (9.34 %).

SACON during 2004 had prioritized seven wetlands form Tiruvallur district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these seven to assess its present potential for conservation (Map 28.1).Two additional wetlands were selected based on google imagery and literature. Since realignment of the district boundaries two wetlands were reallocated to the Chennai district.




**Map 28.1: Wetlands of Tiruvallur district assessed for Prioritization**

**Observations**

Of the seven wetlands selected in the district, Pulicat followed by Poondi are the large wetlands while Mapedu periya eri is the smallest of the wetlands. Around the three wetlands, we recorded 195 plant species both aquatic and terrestrial including 19 invasive species (Table 28.1). The faunal components totaled 171 species with the representation of 65 bird species including the wetland birds. During the field study we observed Cholavaram, Poondi and Puzhal wetlands were Oligotrophic while the others were Mesotrophic in status (Table 28.2). The water quality was comparatively better in Cholavaram lake than the other wetlands. The soil is regularly hydrated annually and hence it also forms a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species. in addition to the release of sewage and agricultural practices around the wetlands influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation

1. Cholavaram Lake
2. Puzhal Lake
3. Padur-Thangal Eri
4. Pulicat Lake
5. Mappedu Lake
6. Poondi Lake
7. Coovam Lake

Table 28.1: The flora and fauna recorded form the wetlands of Tiruvallur District

| S. No | Name of the Wetland | Plants (invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Mappedu Lake | 59(10) | 5 | 7 | 19 | 2 | 15 | 0 | 2 | 37 | 5 |
| 2 | Poondi Lake | 64(9) | 9 | 12 | 19 | 3 | 9 | 0 | 3 | 30 | 5 |
| 3 | Puzhal Lake | 40(10) | 7 | 7 | 16 | 1 | 20 | 0 | 2 | 32 | 5 |
| 4 | Cholavaram Lake | 49(10) | 4 | 7 | 17 | 0 | 14 | 1 | 3 | 27 | 5 |
| 5 | Pulicat Lake | 30(9) | 6 | 6 | 9 | 0 | 13 | 0 | 2 | 24 | 5 |
| 6 | Coovam Lake | 57(7) | 13 | 9 | 21 | 2 | 12 | 0 | 3 | 37 | 5 |
| 7 | Padur-Thangal Eri | 63(10) | 8 | 9 | 8 | 0 | 0 | 0 | 2 | 44 | 4 |
| | Total | 195(19) | 20 | 15 | 30 | 3 | 29 | 1 | 3 | 65 | 5 |

Table 28.2: The water and soil quality assessed form the wetlands of Tiruvallur District

| District Name | Thiruvallur | | | | | | |
|---|---|---|---|---|---|---|---|
| **Wetland Name** | Cholaravam Lake | Coovam Lake | Mappedu Lake | Padur-Thangal Eri | Poondi Lake | Pulicat Lake | Puzhal Lake |
| **Wetland area (ha)** | 615 | 387 | 125 | 509 | 2845 | 57873 | 1977 |
| **Buffer Area in Hectare (ha)** | 3853.3 | 3166.33 | 2218.25 | 3300.02 | 7775.57 | 32227.7 | 6240.21 |
| **Air Temperature °C** | 28.6 | 29.5 | 29.6 | 34.2 | 26.7 | 28.3 | 27.8 |
| **Water Temperature °C** | 28.5 | 28.9 | 28.5 | 33.6 | 26 | 27.6 | 26.9 |
| **Humidity %** | 58 | 54 | 50 | 42 | 60 | 61 | 60 |
| **Nutrients in Water** | Oligotrophic | Mesotrophic | Mesotrophic | Mesotrophic | Oligotrophic | Mesotrophic | Oligotrophic |
| **Water pH** | 7.4 | 7.5 | 7.5 | 9.31 | 7.4 | 8.5 | 7.4 |
| **Water TDS ppm** | 151 | 160 | 98 | 339 | 195 | 2951 | 260 |
| **Water Conductivity ppm** | 276 | 304 | 370 | 477 | 484 | 1000 | 123 |
| **Light Penetration cms** | 120 | 120 | 87 | 82 | 120 | 58 | 111 |
| **Water Salinity ppt** | 0.174 | 0.138 | 0.138 | 0.231 | 0.116 | 2.183 | 0.245 |
| **DO mg/L** | 10.37 | 3.86 | 4.88 | 0.71 | 7.32 | 7.52 | 7.72 |
| **PO4P mg/L** | 0.007 | 0.013 | 0.018 | 0.013 | 0.006 | 0.027 | 0.045 |
| **Water Na ppm** | 28.15 | 25.5 | 13.8 | 547 | 26.87 | 7155 | 33 |
| **Water K ppm** | 3.2 | 3.75 | 1.25 | 4.85 | 3.7 | 300 | 4.07 |
| **Water Li ppm** | 0 | 0.05 | 0 | 0.25 | 0.03 | 1.8 | 0.03 |
| **Water Ca ppm** | 23.25 | 11.7 | 9.6 | 94 | 24.1 | 2575 | 29.8 |
| **Soil Colour code** | 7.5YR 4/4 | 10YR 6/3 | 10YR 5/8 | 7.5YR 6/8 | 10YR 6/4 | 10YR 5/3 | 5YR 4/6 |
| **Soil Colour** | Brown | Pale Brown | Yellowish Brown | Reddish Yellow | Light Yellowish Brown | Brown | Yellowish Red |
| **Soil pH** | 7.55 | 7.49 | 7.62 | 6.9 | 7.56 | 7.02 | 7.37 |
| **Soil TDS ppm** | 78.6 | 95.2 | 128 | 106 | 167 | 1590 | 40.8 |
| **Soil Conductivity ppm** | 110.6 | 134.1 | 179.2 | 149.9 | 235 | 2250 | 57.3 |
| **Soil Salinity ppt** | 0.056 | 0.095 | 0.087 | 0.074 | 0.113 | 1.14 | 0.033 |
| **Soil Na ppm** | 5.4 | 10.8 | 7.1 | 12.6 | 15.7 | 296 | 3.3 |
| **Soil K ppm** | 3 | 9.1 | 2.6 | 2.3 | 3.8 | 21.8 | 0.7 |
| **Soil Li ppm** | 0 | 0.1 | 0 | 0 | 0 | 0.3 | 0 |
| **Soil Ca ppm** | 9.3 | 8.2 | 15.4 | 8.5 | 12.9 | 77.7 | 2.3 |

**Cholavaram Lake**

About 24km north of Chennai, Cholavaram Tank is one of the largest lakes around the city (following Puzhal, Sembarambakkam and Poondi) and the water form the rain-fed reservoir is drawn for the city supply, through canals to Puzhal Lake. During 2015 historical rain and flood, the Lake reached the maximum capacity of 595 (mcft) out of 881 (mcft) and on 1st December 2015, the lake had an inflow of 423 (cusecs) and an outflow of 400 (cusecs). Now, due to failure of Northeast Monsoon, the level of water has gone down and its bed has almost turned playground.

**Lake Survey number**: not provided

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as Cholavaram Lake (Plate 64).

1.2 Villages that surround the wetland include Cholavaram, Vijayanallur, S P K Nagar, Devaneri, Erumavettipalayam, Thedil nagar

1.3 & 1.4 The lake is based in Trivullar District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 13'09.8" N; 13° 13'18.1" N; 13° 14'01.8" N; 13° 14'24.9" N and Longitude: 080° 09'13.6" E; 080° 09'16.6" E; 080° 09'28.9" E; 080° 09'08.1" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tiruvallur Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 640 hectares (Map 28.2).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Tank.

2.3 Based on the secondary information the average depth is 4 meters for the wetland.

2.4 The elevation of the wetland is 20 to 23 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area as well as receives water form the Poondi wetland.
b) The water in the wetland is mostly of intermittent nature as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater. The over flow also feeds into the Puzhal lake.
d) The pH of the water was observed to be alkaline and recorded form 6.9 to 7.5.
e) The lake has fresh water with the salinity recorded at 0.174 ppt at the time of sampling.
f) The wetland was observed to be closer to Oligootrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of December in Trivallur was 5 mm.
b) The atmospheric temperature varied between 28.2 and 28.6 °C and the humidity was form 43 to 58%.

2.7 The area of zone of influence is 3835.3 hectares with a fixed buffer area of 2 kms around the wetland (Map 28.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 65%; | Grassland / Scrubland 15%; |
| Agriculture 0 %; | Settlements (rural) 10%; |
| Settlements (urban) 0%; | Industrial 5%. |

2.9 The comparison of the wetland for the years 2002 and 2017 is given in Map 28.2 & 28.3.

**Section III- Biodiversity**

3.1 List of Plant species: 46 species of plants were recorded around the wetland during our visit (Table 28.3).

3.2 List of animal species: 78 animal species including four domestic species were recorded during the survey (Table 28.4a-h)

3.3 Species of Conservation importance: Two near Threatened species of birds were observed during the survey (Table 28.4a-h)

3.4 Major Plant invasive alien species and extent of invasion: 10 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.

4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is done by very few families which is a community right. The fish seed is introduced by the Tamil Nadu Fisheries department and mostly comprises of the common carps.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching. The locals only frequent it feed the fish as an entertainment.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge and overflow form the wetlands contributes to the Puzhal Lake

4.9 There is significant runoff form the surrounding catchment area and due to deforestation the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is only majorly used by morning walkers.

4.12 There are no agriculture or plantation activities within the wetland but it is a wetland where fishing is the major livelihood.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a fishery although it is not a major commercial activity.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is small scale commercial fishing activity but only some recreational fishery is undertaken by local children and adults during their free time.

5.2 Major portion of the water is utilized for irrigation

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle was observed.

5.5 The water is not used for any domestic purposes.

5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does show major change in the pattern of water inflow and outflow.

6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities that are growing into the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.
6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The state highway passes close by the wetland leading to polluting activities. New industries are being set up in the catchment area. The wetland faces a minimal threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Cholavaram Lake**

Anushiya J. and Ramachandran A. (2015) Assessment of Water Availability in Chennai Basin under Present and Future Climate Scenarios. In: Ramkumar M., Kumaraswamy K., Mohanraj R. (eds) Environmental Management of River Basin Ecosystems. Springer Earth System Sciences. Springer, Cham.

Murugesana A., Bavana N., Vijayakumar C., and Vignesha T. (2015) IJISET - International Journal of Innovative Science, Engineering & Technology, Vol. 2 Issue 3, March: 715 - 728.

Narasimha Raghavan G. (2004) New Public Management: Chennai.CCS Research Internship Papers 2004. Centre for Civil Society publication. Pp. 30.

Nikita Roy Mukherjee and Christopher Samuel (2016) Assessment of the Temporal Variations of Surface Water Bodies in and around Chennai using Landsat Imagery Indian Journal of Science and Technology 9(18).

Sunayana Manipal, Joseph John, Saravanan S and Meignana Arumugham (2013) Journal of Advanced Oral Research, Vol 4; Issue 2: May - Aug : 1-7.

Table 28.3: List of Plant species recorded along the Cholavaram Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 11 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 16 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 17 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 18 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 19 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 20 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 21 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 22 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 23 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 24 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 25 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 26 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 27 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 28 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 29 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai, Mukkuttikkodi | Nyctaginaceae | Native | NA |
| 30 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 31 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 32 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 33 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 34 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 35 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 36 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 37 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 38 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 39 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 40 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 41 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kotti kizhangu | Aponogetonaceae | Native | LC |
| 42 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 43 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 44 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 45 | *Enteropogon dolichostachyus* | Finger grass | | Poaceae | Native | NA |
| 46 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.4a: List of Insects recorded along the Cholavaram Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 2 | Giant Water Bug | *Lethocerus deyrollei* | Belostomatidae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |

Table 28.4b: List of Butterflies recorded along the Cholavaram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 8 | Common Pierrot | *Castalius rosimon* | Polyommatinae | Common |

| | | | | |
|---|---|---|---|---|
| 9 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 10 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 11 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Double-Branded Crow | *Euploea sylvester coreta* | Danainae | Common |
| 14 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 15 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 16 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 17 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 28.4c: List of Odonata recorded along the Cholavaram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 7 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 28.4d: List of Fishes recorded form the Cholavaram Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 9 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 10 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 11 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 13 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 14 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodi meen | Clupeidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.4e: List of Amphibians recorded form the Cholavaram Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Indian Bull Forg | *Hoplobatrachus tigerinus* | Dicroglossidae | Least Concern |

Table 28.4f: List of Reptiles recorded along the Cholavaram Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Water Snake | *Xenochrophis piscator* | Colubridae | Least Concern |

Table 28.4g: List of Birds recorded along the Cholavaram Lake

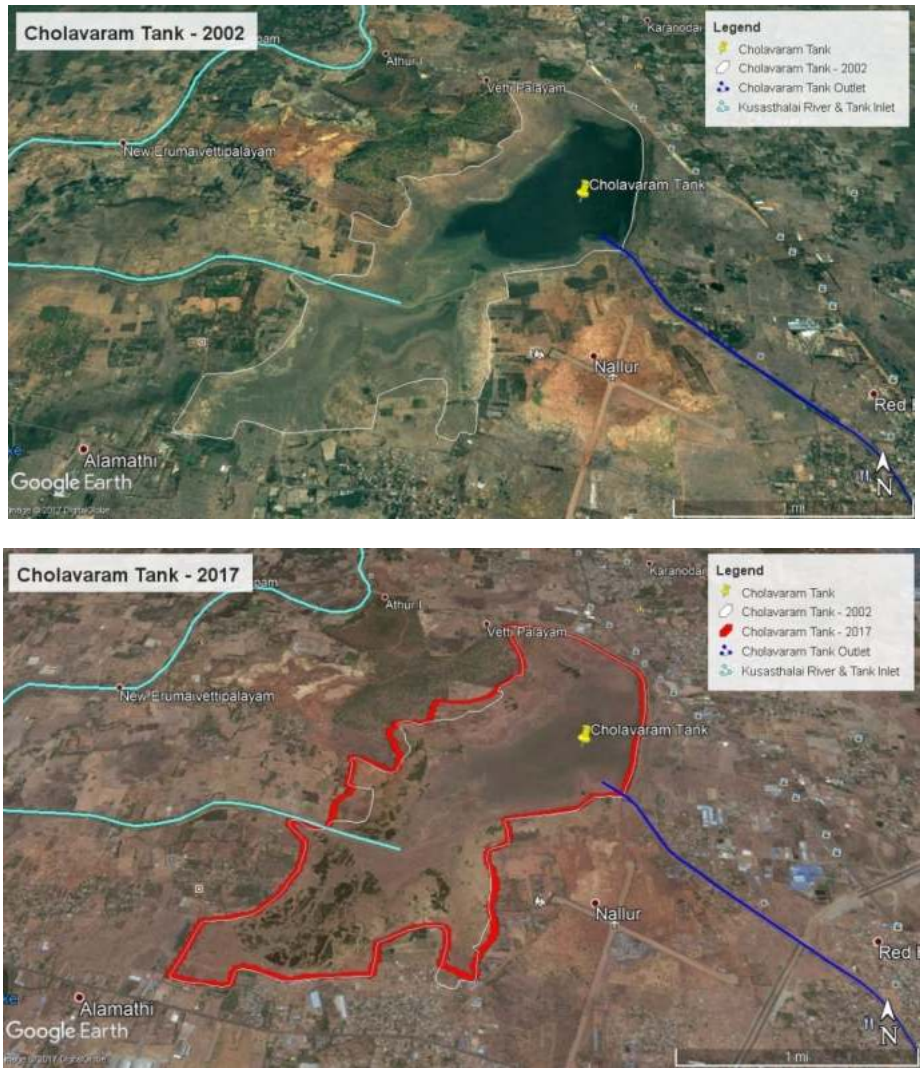
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 6 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 9 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 10 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 11 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 12 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 13 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 14 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 15 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 16 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 17 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 18 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 19 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 20 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 21 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 22 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 23 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 24 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 25 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 26 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 27 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

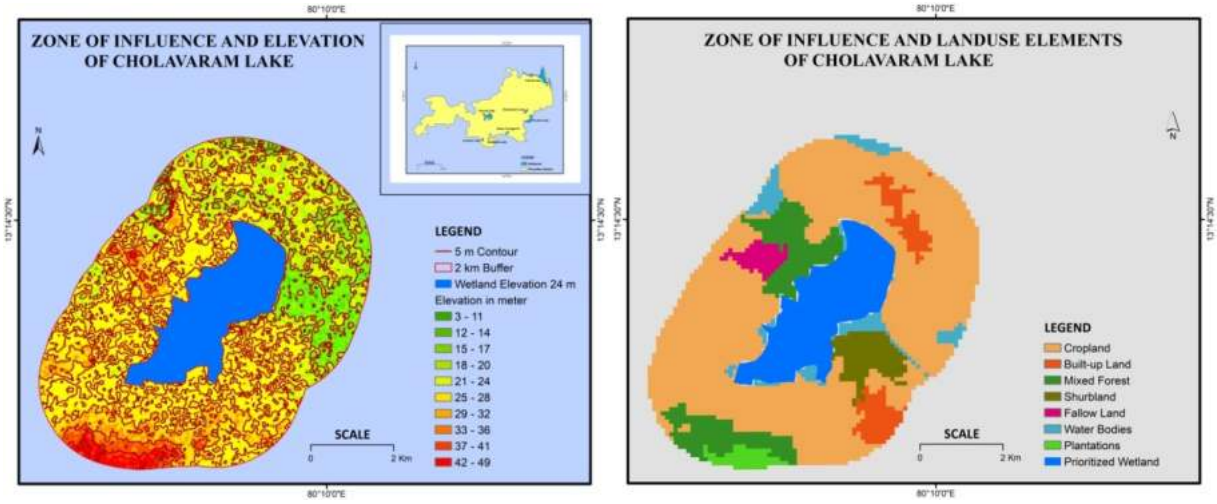
Table 28.4h: List of Mammals recorded along the Cholavaram Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 28.2: Comparative Google imagery for Cholavaram Lake**




**Map 28.3: The zone of influence around the Cholavaram lake.**



**Coovam Lake**

**Lake Survey Number**: not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Coovam tank (Plate 64).

1.2 Villages that surround the wetland include Coovam, Perambakkam, Narasingapuram, Elamayan ckottur, Chellapattidi, Kottur, Gunagarambakkam, Elambakkam, Poonor.

1.3 & 1.4 The lake is based in Tiruvallur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 00'16.7" N; 13° 01'30.9" N; 13° 01'30.0" N and Longitude: 079° 48'33.5" E; 079° 48'38.8" E; 079° 48'37.5" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tiruvallur Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 431 hectares (Map 28.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal Intermittent lake.

2.3 Based on the secondary information the average depth is 3 meters for the wetland.

2.4 The elevation of the wetland is 61 to 67 meters (asl).

2.5 Water regime

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area.

b) The water in the wetland is mostly of intermittent in nature.

c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater.

d) The pH of the water was observed to be alkaline and recorded up to 7.5.

e) The lake has fresh water with the salinity recorded at 0.138 ppt at the time of sampling.

f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does not receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfall for the month of December in Tiruvallur was 6 mm.

b) The atmospheric temperature varied between 28 and 29.5 °C and the humidity was form52 to 54%

2.7 The area of zone of influence is 3166.33 hectares with a fixed buffer area of 2 kms around the wetland (Map 28.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forests 0% ; | Grasslands/Scrublands 10%; |
| Agriculture 80%; | Settlements (rural) 10%; |
| Settlements (Urban) 10%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2011 and 2017 is given in Map 28.4 & 28.5.

**Section III- Biodiversity**

3.1 List of Plant species: 56 species of plants were recorded around the wetland during our visit (Table 28.5).

3.2 List of animal species: 102 faunal species including four domestic species were recorded during the survey (Table 28.6 a-h).

3.3 Species of Conservation importance: Common species of birds were observed during the survey (Table 28.6a-h).

3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is undertaken on a minor scale.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation only the locals come for recreational fishing.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge the overflow forms the Coovam River.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although it is not for any the commercial purpose.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial fishing activity but only some recreational fishery is undertaken by local children and adults during their free time.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland and not within the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland does not have any idol immersion but solid waste dumping and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Coovam Lake

George Santhi M.and Senthilnathan T. (2016), Optical Sensing of Mercury(II) by Green-Synthesized Silver Nanoparticles Prepared Using *Garcinia cambogia* and Their Application in Real Water Sample Analysis. Sensor Letters, Volume 14, Number 8, August pp. 775-779(5)

Mary Bai M. (1993) Ecological studies on the River Cooum with special reference to pollution. Rec. Zool..Surv. India, 93 (3-4) : 393·416.

Rema Devi K., Indra T. J., Raghunallian M. B. and Mary Bai M. (1999) On a collection of fish fauna form Chennai, Chengleput and Tiruvallur districts of Tamil Nadu Rec. Zoo I. Surv. India 97 (Part-4) : 151-166.

Table 28.5: List of Plant species recorded along the Coovam Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 3 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 4 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 8 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 11 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Sesbania procumbens* | Trailing sesbans | | Fabaceae | Native | NA |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 17 | *Vigna trilobata* | Wild gram,Three lobe leaf cowpea | | Fabaceae | Native | NA |
| 18 | *Senna didymobotrya* | Popcorn Cassia | --- | Caesalpiniaceae | Native | NA |
| 19 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 20 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 21 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 22 | *Diplocyclos palmatus* | Lollipop Climber | Aiviralkkovai | Cucurbitaceae | Native | NA |
| 23 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 24 | *Spermacoce pusilla* | Tiny False Buttonweed, Erect False Button weed | | Rubiaceae | Native | NA |
| 25 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 26 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 27 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 28 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 29 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 30 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 31 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 32 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 33 | *Barleria buxifolia* | Box-Leaved Barleria | Kattimullu, Rosmullippuntu | Acanthaceae | Native | NA |
| 34 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 35 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 36 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 37 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 38 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 39 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 40 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 41 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 42 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 43 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 44 | *Jatropha tanjorensis* | Tanjore jatropha | | Euphorbiaceae | Native | NA |
| 45 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 46 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 47 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 48 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 49 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 50 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 51 | *Cyperus dubius* | White Water Sedge | Veluttha nirbasi | Cyperaceae | Native | LC |
| 52 | *Echinochloa crus-galli* | Barnyard Grass | | Poaceae | Native | LC |
| 53 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |
| 54 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 55 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |
| 56 | *Azolla caroliniana* | Mosquito fern,Water velvet | | Salviniaceae | Introduced | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.6a: List of Insects recorded along the Coovam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Mantis Egg | *Ootheca* | Mantodae |
| 4 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 5 | Water Strider | *Gerris sp.* | Gerridae |
| 6 | Cow bug | *Oxyrachis tarandus* | Membracidae |
| 7 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 8 | Transverse lady beetle | *Coccinella transversalis* | Coccinellidae |
| 9 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 10 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 11 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 12 | Great Yellow Potter Wasp | *Delta campaniforme* | Vespidae |
| 13 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 28.6b: List of Butterflies recorded along the Coovam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 8 | Dark Grass Blue | *Zizeeria karsandra* | Polyommatinae | Common |

| | | | | |
|---|---|---|---|---|
| 9 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 10 | Tiny Grass Blue | *Zizula hylax* | Polyommatinae | Common |
| 11 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 12 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 13 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 14 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 15 | Common Crow | *Euploea core* | Danainae | Common |
| 16 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 17 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 18 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 19 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 20 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 21 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 28.6c: List of Odonata recorded along the Coovam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 7 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 8 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 9 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 28.6d: List of Arachnida recorded along the Coovam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 28.6e: List of Fishes recorded form the Coovam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 11 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodi meen | Clupeidae | LC |
| 12 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.6f: List of Reptiles recorded along the Coovam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Water Snake | *Xenochrophis piscator* | Colubridae | Least Concern |

Table 28.6g: List of Birds recorded along the Coovam Lake

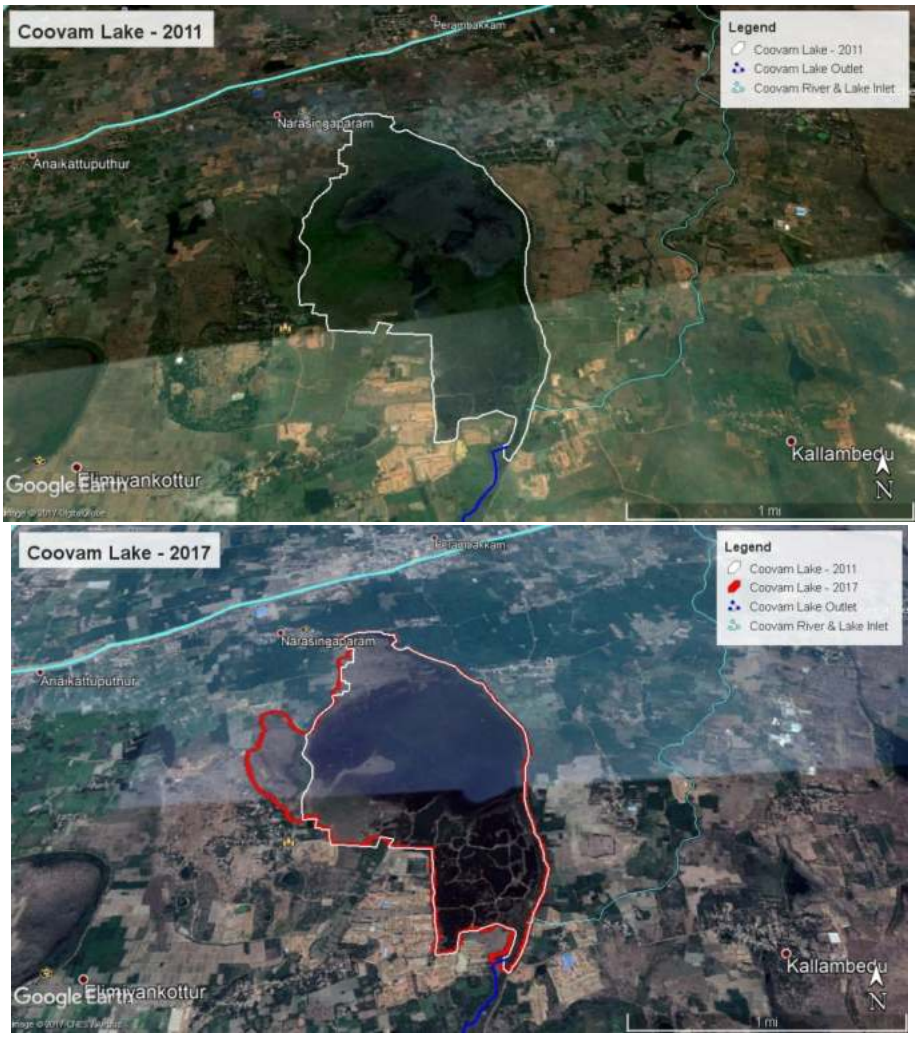
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 2 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 3 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 4 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 5 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 12 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 13 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 14 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 15 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 16 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 17 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 18 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 19 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 20 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 21 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 22 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 23 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 24 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 25 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 26 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 27 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 28 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 29 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 30 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 31 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 32 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 33 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 34 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 35 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 36 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |
| 37 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

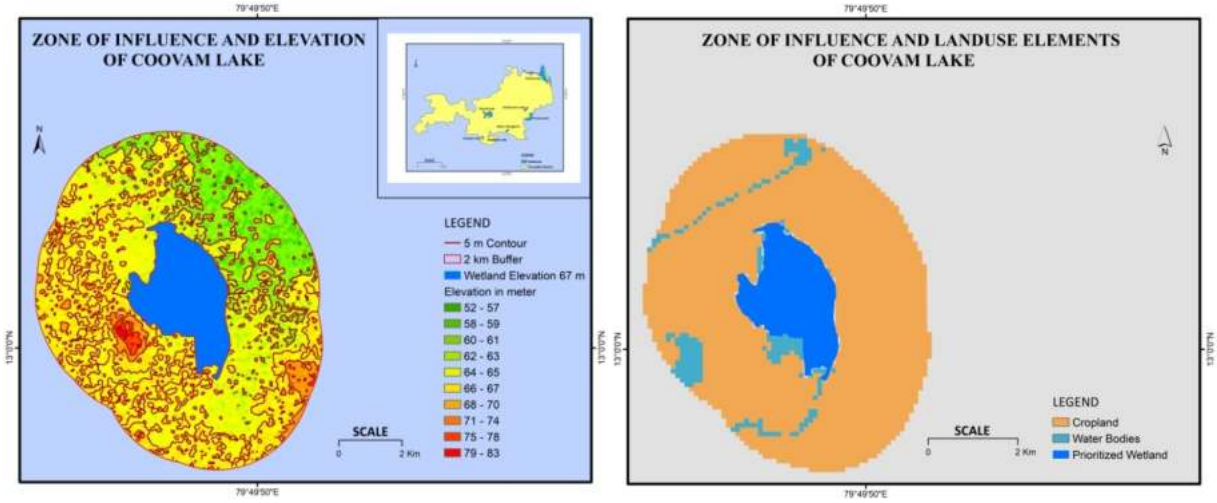
Table 28.6h: List of Mammals recorded along the Coovam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 28.4: Comparative Google imagery for Coovam Lake**




**Map 28.5: The zone of influence around the Coovam lake.**



**Mappedu Lake**

**Lake Survey Number**: not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Mapedu Lake or Mapedu eri (Plate 65)

1.2 Villages that surround the wetland include Mapedu, Meicheri, Avanthavakkam, Eraamangalam, Satharai, Muthur, Narasingamangalam, Govindamedu, Keelcheri.

1.3 & 1.4 The lake is based in Tiruvallur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 01'35.6" N; 13° 01'12.1" N; 13° 01'05.6" N; 13° 00'55.1" N and Longitude: 079° 51'35.6" E; 079° 51'52.6" E; 079° 51'56.06" E; 079° 52'02.8" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Thiruvallur Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 118 hectares (Map 28.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 4.5 meters for the wetland.

2.4 The elevation of the wetland is 65 to 68 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of seasonal intermittent nature.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater.
d) The pH of the water was observed to be alkaline and recorded up to 7.5.
e) The lake has fresh water with the salinity recorded at 0.138 ppt at the time of sampling.
f) The wetland was observed to be Mesotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfall for the month of December in Trivallur was 6 mm.
b) The atmospheric temperature varied between 28.3 and 29.6 °C and the humidity was form 48 to 50%.

2.7 The area of zone of influence is 2218.25 hectares with a fixed buffer area of 2 kms around the wetland (Map 28.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands / Scrub lands 15%; |
| Agriculture 75%; | Settlements (rural) 10%; |
| Settlements (urban) 10%; | Industrial 0%. |

2.9 The comparison of the wetland for the years 2011 and 2017 is given in Map 28.6 &28.7.

**Section III- Biodiversity**

3.1 List of Plant species: 54 species of plants were recorded around the wetland during our visit (Table 28.7).

3.2 List of animal species: 92 faunal species including 4 domestic species were recorded during the survey (Table 28.8a-h).

3.3 Species of Conservation importance : Common species of birds were observed during the survey (Table 28.8a-h).

3.4 Major Plant invasive alien species and extent of invasion: Ten invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around and within the wetland and major portion of the lake, water is used for irrigation.

4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is not undertaken.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for local recreation and is not frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The bird enthusiast do not visit the wetland despite the diversity.

4.12 There are agriculture or plantation activities within the wetland by locals and forest department

4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.

4.14 The wetland supports a fishery although it is not for any the commercial purpose.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial fishing activity and some recreational fishery is undertaken without any lease form government or community. .

5.2 Major portion of the water is utilized for irrigation

5.3 Agriculture is undertaken around the wetland and not within the wetland.

5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.

5.5 The water is not used for any domestic purposes.

5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.

6.3 There is increase in agricultural activities around the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.

6.5 The wetland does not have any idol immersion but solid waste dumping and encroachment activities are observed to a very small extent.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing. Harvesting of fish is also undertaken.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Mapedu Lake

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON. pp. 532

Table 28.7: List of Plant species recorded along the Mappedu Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 2 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 3 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 6 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 9 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 10 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 11 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 12 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 17 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 18 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 19 | *Spermacoce ocymoides* | Purple leaved button | | Rubiaceae | Native | LC |
| 20 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 21 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 22 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 23 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 24 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 25 | *Azima tetracantha* | Needle Bush, Mistletoe Berrythorn | Sugam cheddi, Sangilai | Salvadoraceae | Native | NA |
| 26 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 27 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 28 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 29 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 30 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 31 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 32 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 33 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 34 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 35 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 36 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 37 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 38 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 39 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 40 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 41 | *Acalypha ciliata* | Fringed Acalypha | --- | Euphorbiaceae | Native | NA |
| 42 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 43 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 44 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 45 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 46 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 47 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 48 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 49 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 50 | *Eleusine indica* | Indian crowfoot grass,Indian goose grass,Wiregrass | Thippa ragi, Keveru | Poaceae | Native | LC |
| 51 | *Heteropogon contortus* | Black Speargrass | | Poaceae | Native | NA |
| 52 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 53 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 54 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.8a: List of Insects recorded along the Mappedu Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 28.8b: List of Butterflies recorded along the Mappedu Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 5 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 8 | Common Pierrot | *Castalius rosimon* | Polyommatinae | Common |
| 9 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 10 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 11 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 12 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 13 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 14 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 15 | Common Crow | *Euploea core* | Danainae | Common |
| 16 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 17 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 18 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 19 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 28.8c: List of Odonata recorded along the Mappedu Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |

| | | | | |
|---|---|---|---|---|
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 7 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 28.8d: List of Arachnida recorded along the Mappedu Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 28.8e: List of Fishes recorded form the Mappedu Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 11 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 12 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |
| 13 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 14 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 15 | *Notopterus notopterus* | Featherback | Chotta vaalai meen | Notopteridae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.8f: List of Reptiles recorded along the Mappedu Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 28.8g: List of Birds recorded along the Mappedu Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Northern Shoveler | *Anas clypeata* | Anatidae | Least Concern |
| 4 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 8 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 12 | Black-winged Kite | *Elanus caeruleus* | Accipitridae | Least Concern |
| 13 | Eurasian Marsh Harrier | *Circus aeruginosus* | Accipitridae | Least Concern |
| 14 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 15 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 16 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 17 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 18 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 19 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 20 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 21 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 22 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 23 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 24 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 25 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 26 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 27 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 28 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 29 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 30 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 31 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 32 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 33 | Rosy Starling | *Pastor roseus* | Sturnidae | Least Concern |
| 34 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 35 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 36 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |
| 37 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 28.8h: List of Mammals recorded along the Mappedu Lake.

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 4 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

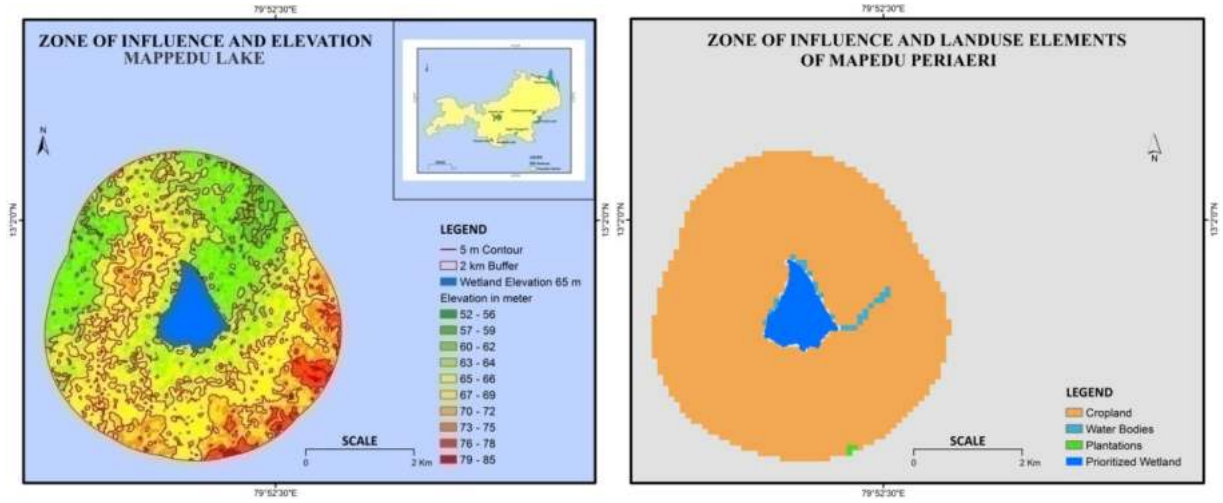
**Map 28.6: Comparative Google imagery for Mappedu Lake**







**Map 28.7: The zone of influence around the Mappedu Lake.**



**Padur-Thangal Eri**

**Lake Survey Number**: Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Padur Thangal eri (Plate 65).

1.2 Villages that surround the wetland include Padur and Thangal.

1.3 & 1.4 The lake is based in Poonamallee taluka in Tiruvallur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 03'06.5" N; 13° 03'08.3" N; 13° 03'10.0" N; 13° 04'02.1" N; 13° 02'08.6" N; and Longitude: 079° 59'57.3" E; 079° 59'54.8" E; 079° 59'49.7" E; 080° 00'53.8" E; 080° 00'08.7" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Thiruvallur Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 507 hectares (Map 28.8).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 2 to 3 meters for the wetland.

2.4 The elevation of the wetland is 34 to 38 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of seasonal intermittent nature.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater and the overflow goes to Chembrapakam eri.
d) The pH of the water was observed to be alkaline and recorded form 8.75 to 9.87.
e) The lake has fresh water with the salinity recorded at 0.231 ppt at the time of sampling.
f) The wetland was observed to be Mesotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of August in Trivallur was 6 mm.
b) The atmospheric temperature varied between 34.2 and 32.2 °C and the humidity was form 42 to 49%.

2.7 The area of zone of influence is 1805 hectares & varies form 0.42 to 1.65 Kms (Map 28.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 05%; | Grasslands / Scrub lands 0%, |
| Agriculture 60%; | Settlements (rural) 25% |
| Settlements (urban) 0%; | Industrial 10% |

2.9 The comparison of the wetland for the years 2004 and 2018 is given in Map 28.8 & 28.9.

**Section III- Biodiversity**

3.1 List of Plant species: 60 species of plants were recorded around the wetland during our visit (Table 28.9).

3.2 List of animal species: 75 faunal species including 3 domestic species were recorded during the survey (Table 28.10a-f).

3.3 Species of Conservation importance: Common species of birds were observed during the visit (Table 28.10a-f).

3.4 Major Plant invasive alien species and extent of invasion: 10 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Lantana camara* and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is a commercial and recreational option in the wetland for many as tender are issued only recently by PWD.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for local recreation and is not frequented by nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There is agriculture or plantation activities within the wetland by locals and forest department.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery for commercial purpose.
4.15 There was no mining for sand or silt undertaken.
4.16 Industries are present that also release their waste into the wetland.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity and some recreational fishery is undertaken without any lease form government or community until recently.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland and not within the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.
6.5 The wetland does not have any idol immersion but solid waste dumping and encroachment activities are observed to a very small extent.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing. Harvesting of fish is also undertaken. Sewage and effluent release has to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Padur Thangal eri

Praveen Manivannan (Mar. 25, 2018), Aravind Amirtharaj (Jan. 6, 2018) ebirds Checklist. (ebird.org/India/hotspot/L5007958?yr=all&m=&rank=mrec)

Lakshmi K. (Jan. 19, 2013) Thangal lake waits to be rejuvenated. (thehindu.com/news/cities/chennai/chen-downtown/thangal-lake-waits-to-be-rejuvenated/article4322919.ece)

Table 28.9: List of Plant species recorded along the Padur -Thangal Eri

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abelmoschus ficulneus* | White wild Musk Mallow | Kattu Vendai | Malvaceae | Native | NA |
| 4 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 5 | *Malvastrum coromandelianum subsp. coromandelianum* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 8 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Alysicarpus monilifer* | Necklace-Pod Alyce Clover | Kassukodi | Fabaceae | Native | NA |
| 11 | *Alysicarpus ovalifolius* | Alyce clover | | Fabaceae | Native | NA |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Sesbania sesban* | Common Sesban, Egyptian Rattlepod | | Fabaceae | Native | NA |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 17 | *Turnera subulata* | White Alder | | Turneraceae | Invasive | NA |
| 18 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 19 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 20 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 21 | *Glinus oppositifolius* | Jima | Pampantra, Thura poondu | Molluginaceae | Native | NA |
| 22 | *Oldenlandia umbellata* | Chay Root, Indian madder, Choy root | Chayam, Chayaver, Emboorel, Imbura-ver | Rubiaceae | Native | |
| 23 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 24 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 25 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 26 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 27 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 28 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 29 | *Hemidesmus indicus* | Indian Sarsaparilla | Nannari, Sugandipala | Apocynaceae | Native | NA |
| 30 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 31 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 32 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 33 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 34 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 35 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 36 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 37 | *Mesosphaerum suaveolens* | American mint, Bush mint, Chan, Horehound, Pignut, Stinking roger | | Lamiaceae | Naturalized | NA |
| 38 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 39 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 40 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 41 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 42 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 43 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 44 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 45 | *Phyllanthus maderaspatensis* | Madras Leaf flower | Nilanelli | Phyllanthaceae | Native | NA |
| 46 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 47 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 48 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 49 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 50 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 51 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 52 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kotti kizhangu | Aponogetonacea e | Native | LC |
| 53 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 54 | *Cyperus dubius* | White Water Sedge | Veluttha nirbasi | Cyperaceae | Native | LC |
| 55 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 56 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 57 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 58 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 59 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 60 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.10a: List of Insect species recorded along the Padur -Thangal Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 3 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Giant Honey Bee | *Apis dorsata* | Apidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 8 | Spider Wasp | *Pompilidae sp.* | Pompilidae |

Table 28.10b: List of Butterfly species recorded along the Padur -Thangal Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Continental Swift | *Parnara ganga* | Hesperiinae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 5 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 6 | Blue Pansy | *Junonia orithiya* | Nymphalinae | Common |
| 7 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 8 | Heliotrope Moth | *Utetheisa pulchelloides* | Erebidae | Common |

Table 28.10c: List of Odonata species recorded along the Padur -Thangal Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 28.10d: List of Reptile species recorded along the Padur -Thangal Eri

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 28.10e: List of Bird species recorded along the Padur -Thangal Eri

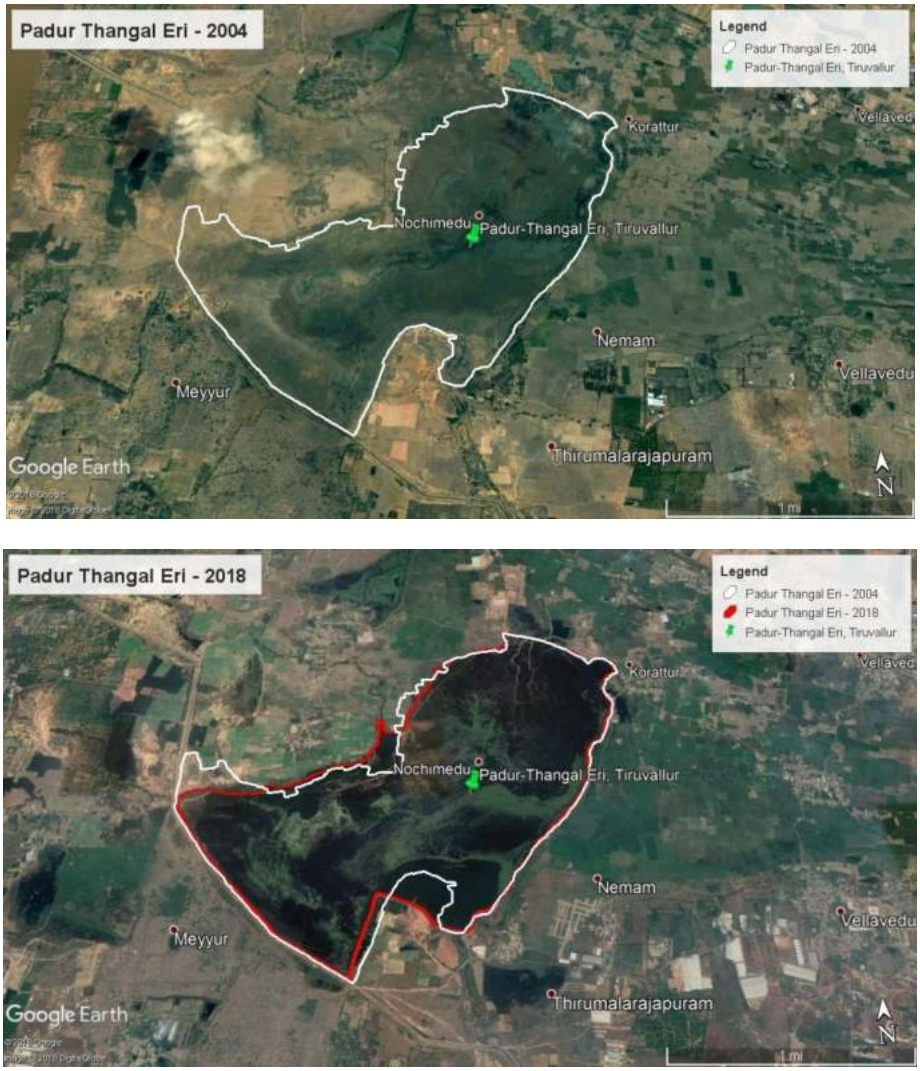
| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 3 | Cotton Pygmy-goose | *Nettapus coromandelianus* | Anatidae | Least Concern |
| 4 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 5 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 6 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 7 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 8 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 9 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 10 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 11 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 12 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 13 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 14 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 15 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 16 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 17 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 18 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 19 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 20 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 21 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 22 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 23 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 24 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 25 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 26 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 27 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 28 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 29 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 30 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 31 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 32 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 33 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 34 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 35 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 36 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 37 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 38 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 39 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 40 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 41 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 42 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 43 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 44 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |

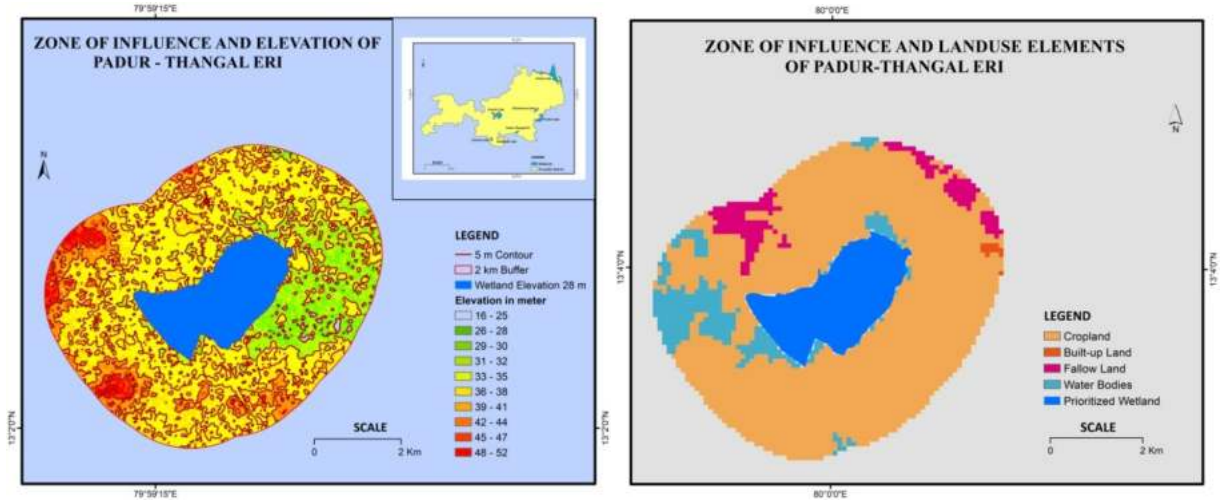
Table 28.10f: List of Mammal species recorded along the Padur -Thangal Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

Map 28.8: Comparative google imagery for Padur -Thangal Eri




Map 28.9: Zone of influence for Padur -Thangal Eri



**Poondi Lake**

Lake survey number: not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Poondi Lake also called as Sathyamoorthy Dam (Plate 66).

1.2 Villages that surround the wetland include Poondi, Pullarambakkam, Sirvunannur, Kandigai, Pudur, Kuppama sathiram, Metupalayam, Thiripakkam, Bangarampet, Arampakkam, Patarapermandur.

1.3 & 1.4 The lake is based in Tiruvallur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 09'58.0" N; 13° 11'44.4" N; 13° 10'54.1" N; 13° 11'52.5" N; 13° 12'31.1" N; 13° 12'48.0" N; 13° 11'42.4" N; and Longitude: 079° 53'25.3" E; 079° 53'27.0" E; 079° 53'24.0" E; 079° 53'27.0" E; 079° 52'26.5" E 079° 51'58.4" E; 079° 50'15.6" E

1.6 The wetland is a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tiruvallur Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 2613 hectares (Map28.10).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category in the sub category Tank of intermittent nature.

2.3 Based on the secondary information the average depth is 8 meters for the wetland.

2.4 The elevation of the wetland is 46 to 52 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and direct inflow form the River Krishna.
b) The water in the wetland is mostly of seasonal intermittent nature.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater.
d) The wetland is oligotrophic and has a vast expanse.
e) The lake has fresh water with the salinity recorded at 0.116 ppt at the time of sampling.
f) The wetland was observed to be Oligotrophic as the wetland was observed to be covered with minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfall for the month of December in Tiruvallur was 6 mm.
b) The atmospheric temperature varied between 23.6 and 26.7 °C and the humidity was form 51 to 60%.

2.7 The area of zone of influence is 7775.57 hectares with a fixed buffer area of 2 kms around the wetland (Map 28.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grass Land / Scrubland 5%; |
| Agriculture 20%; | Settlements (rural) 75%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2010 and 2017 is given in Map 28.10 & 28.11.

**Section III- Biodiversity**

3.1 List of Plant species: 60 species of plants were recorded around the wetland during our visit (Table 28.11).

3.2 List of animal species: 90 faunal species including 4 domestic species were recorded during the survey (Table 28.12a-h).

3.3 Species of Conservation importance: All the species observed during the survey were mostly common (Table 28.12a-h).
3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.* formed almost 90 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for drinking purpose. The municipal corporation provides drinking water to Chennai corporation. The locals use water form the borewell for irrigation.
4.2 Agriculture is undertaken around the wetland and ground water is used for irrigation.
4.3 Fishery is undertaken in the wetland but for the past two years it has been given to the private sector. The local fishers are awaiting the high courts verdict.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is a site for recreation and is frequented by morning walkers nature enthusiast for bird watching.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland acts as a sink for sediments.
4.10 The wetland has a few temples along its bank and a few cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast visit the wetland.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although it is not for any the commercial purpose.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is no commercial fishing activity as it is restricted by the PWD.
5.2 Major portion of the water is utilized for drinking as well as for irrigation.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is used for any domestic purposes.
5.6 The wetland is used for bathing by livestock is undertaken.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has solid waste dumping and encroachment activities. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level. It is protected by the PWD.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some developmental activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for drinking and irrigation by the surrounding.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Poondi Lake


Bhuvana N, Durga Devi G and Prakash P. (2015) The Geochemistry of Poondi Reservoir, Tiruvallur District, Tamilnadu, India THIRD NATIONAL CONFERENCE ON ADVANCES IN CHEMISTRY (NCAC – 2015) On 18th February 2015 Organized by Department of Chemistry, Easwari Engineering College (SRM Group of Institutions), Chennai-600089, India. 47-55.

Bhuvana N., Durga Devi G. and Prakash P. (2015). The Geochemistry of Poondi Reservoir, Tiruvallur District, Tamilnadu, India *International Journal of Innovative Research in Science, Engineering and Technology* 4(1): 45-55.

Bhuvana N., Jeyaprabha B., Amutha M. and Prakash P. (2014) An Assessment of the Distribution of Heavy Metals in the Riverine Sediments of Kortalaiyar River in Tamilnadu, India. IOSR Journal of Applied Chemistr.Volume 7, Issue 11 Ver. II. (Nov. 2014), PP 47-54.

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Devi P. A., Padmavathy P., Srinivasan A. and Jawahar P. (2015) Environmental Impact of Cage Culture on Poondi Reservoir, Tamil Nadu. Curr World Environ;10(3).

Murugesan A., Bavana N., Vijayakumar C. and Vignesha T. (2015). Drinking Water Supply And Demand Management In Chennai City- A Literature Survey International Journal of Innovative Science, Engineering & Technology 2(3): 715-728

Rajamanickam R. and Nagan S. (2016) A Study on Water Quality Status of Major Lakes in Tamil Nadu.*International Journal of Research in Environmental Science (IJRES)* 2(2): 9-21

Sreenivasan A. (1970). Limnology of tropical impoundments: a comparative study of the major reservoirs in Madras State (India) *Hydrobiologia* 36: 443 - 469

Subramani T., Syed Sharukh L. and Priyanka S. (2017) Water Resource Planning And Implementation For Chennai Metro Using GIS *International Journal of Emerging Trends & Technology in Computer Science* 6(3): 126-137

Thirunavukkarasu O. S.; Viraraghavan T. and Selvapathy P. (2000) A comparative account of phosphorus release form sediments of a lake and a reservoir: laboratory experiments. Fresenius Environmental Bulletin Vol.9 No.7/8 pp.461-467

Venkatachalam L. (2015) Informal water markets and willingness to pay for water: a case study of the urban poor in Chennai City, IndiaInternational Journal of Water Resources Development Vol. 31, Iss. 1,

Table 28.11: List of Plant species recorded along the Poondi Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN status |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 5 | *Malvastrum coromandelianum subsp. coroman delianum* | False mallow, Broom weed, Clock plant | | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 11 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 12 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 13 | *Desmodium adscendens* | Creeping Tick Trefoil | Sirupulllati | Fabaceae | Native | LC |
| 14 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 15 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 16 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 17 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 18 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 19 | *Syzygium cumini* | Java plum | Naaval plum | Myrtaceae | Native | NA |
| 20 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 21 | *Diplocyclos palmatus* | Lollipop Climber | Aiviralkkovai | Cucurbitaceae | Native | NA |
| 22 | *Trianthema portulacastrum* | Desert Horse Purslane | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 23 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 24 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 25 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 26 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 27 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 28 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 29 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 30 | *Azima tetracantha* | Needle Bush, | Sugam cheddi, Sangilai | Salvadoraceae | Native | NA |
| 31 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 32 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 33 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 34 | *Evolvulus alsinoides* | Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 35 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 36 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 37 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 38 | *Barleria acuminata* | Long-flower Barleria | Vellai Kurinji | Acanthaceae | Native | NA |
| 39 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 40 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 41 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 42 | *Tectona grandis* | Teak | Tekkumaram | Lamiaceae | Native | NA |
| 43 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 44 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai | Nyctaginaceae | Native | NA |
| 45 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 46 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 47 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 48 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 49 | *Acalypha capitata* | ---- | Sirukurunjan | Euphorbiaceae | Native | NA |
| 50 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 51 | *Euphorbia antiquorum* | Triangular Spurge, | Chaturakalli, Kalli, | Euphorbiaceae | Native | |
| 52 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 53 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 54 | *Flueggea leucopyrus* | Bushweed | Mulluppulatti | Phyllanthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 55 | *Streblus asper* | Sand paper tree | Kurripila,parayan, | Moraceae | Native | NA |
| 56 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 57 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 58 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 59 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 60 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.12a: List of Insects recorded along the Poondi Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 7 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 8 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 9 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 28.12b: List of Butterflies in th recorded along the Poondi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | African Babul Blue | *Azanus jesous* | Polyommatinae | Common |
| 9 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 10 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 11 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 12 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 13 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 14 | Common Crow | *Euploea core* | Danainae | Common |
| 15 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 16 | Common Leopard | *Phalanta phalantha* | Heliconiinae | Common |
| 17 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 18 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 19 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 28.12c: List of Odonata recorded along the Poondi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Pruinosed Dartlet | *Agriocnemis femina* | Coenagrionidae | Common |
| 5 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 8 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 9 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 10 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 11 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 12 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |

Table 28.12d: List of Arachnida species recorded along the Poondi Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

| | | | |
|---|---|---|---|
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |
| 3 | Orb-weaver spider | *Araneidae* | Araneidae |

Table 28.12e: List of Fishes recorded form the Poondi Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 8 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 9 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.12f: List of Reptiles recorded along the Poondi Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |
| 3 | Water Snake | *Xenochrophis piscator* | Colubridae | Least Concern |

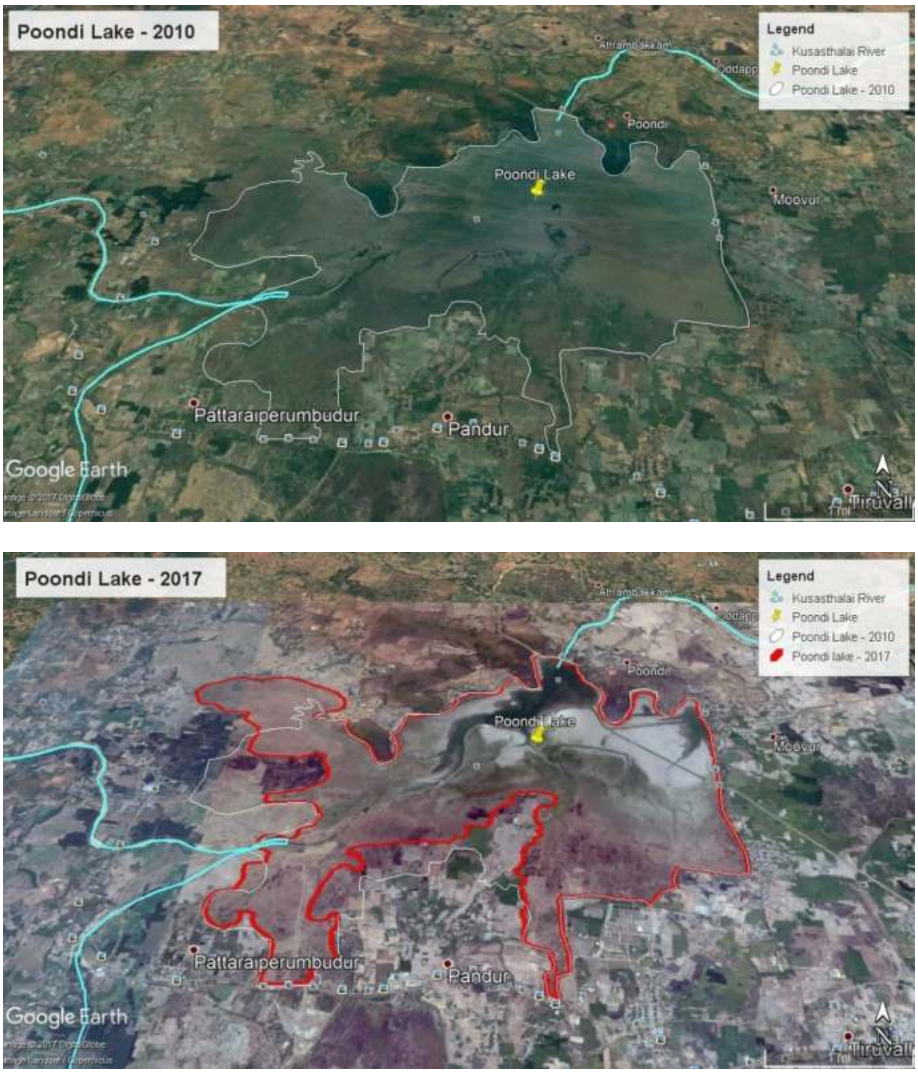
Table 28.12g: List of Birds recorded along the Poondi Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 5 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 8 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 11 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 12 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 13 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 14 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 15 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 16 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 17 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 18 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 19 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 22 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 23 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 24 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 25 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 26 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 27 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 28 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 29 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |
| 30 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

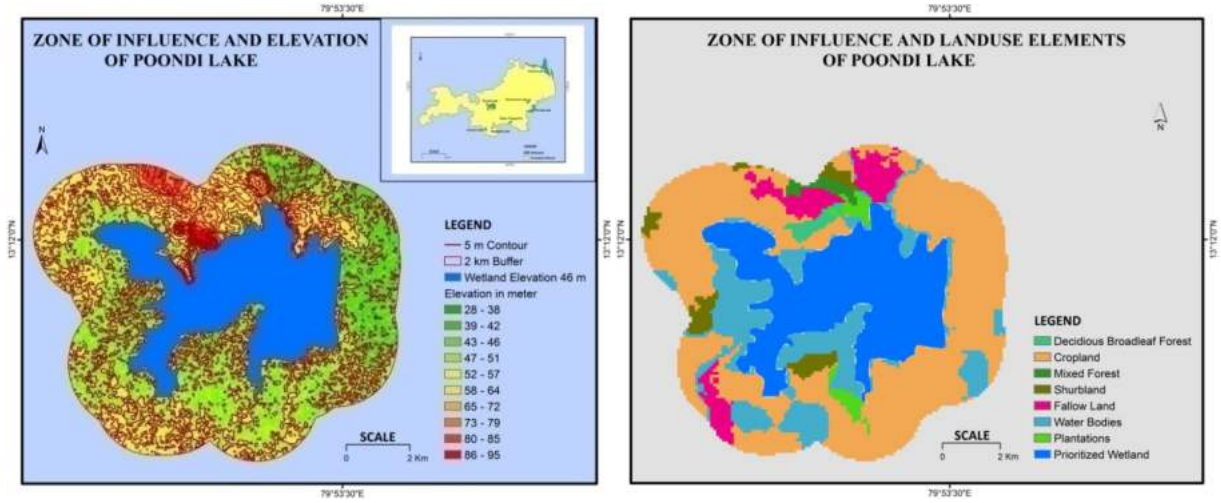
Table 28.12h: List of Mammals recorded along the Poondi Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 4 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 28.10: Comparative Google imagery for Poondi Lake**




**Map 28.11: The zone of influence around the Poondi lake.**



**Pulicat Lake**

**Pulicat Lake** formerly **Palaverkaadu Eri** is the second largest brackish water lake or lagoon in India, after Chilika Lake. It straddles the border of Andhra Pradesh and Tamil Nadu states with over 96% of it in Andhra Pradesh and 4% in Tamil Nadu situated on the Coromandal Coast in South India. The lake encompasses the Pulicat Lake Bird Sanctuary. The barrier island of Sriharikota separates the lake form the Bay of Bengal and is home to the Satish Dhawan Space Centre.

**Lake Survey Number**: Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Pulicat Lake also known as Pazhaverkkadu lake (Plate 66).

1.2 Villages that surround the wetland include Pazhaverkkadu, Thirumalai nagar, Gunamkuppam, Lighthouse kuppam, Nadukuppam, Karimanl, Pettai, Pallikuppam, Vanirankuppam, Nakathuravur, Arankuppam.

1.3 & 1.4 The lake is based in Thiruvallur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 25'10.1" N; 13° 25'29.2" N; 13° 25'40.1" N; 13° 26'34.3" N; 13° 27'45.3" N and Longitude: 080° 19'13.4" E; 080° 19'13.4" E; 080° 18'32.1" E; 080° 15'42.8" E; 080° 14'58.0" E.

1.6 The wetland is not Protected Area.

1.7 The wetland comes under the jurisdiction of Tamil Nadu Tourism Department Chennai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 56781 hectares (Map 28.12).

2.2 The Wetland type - the wetland belongs to the Natural category in the sub category Coastal.

2.3 Based on the secondary information the average depth is 3 meters for the wetland.

2.4 The elevation of the wetland is 1 to 4 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and direct inflow form the Swarnamugi River, Kalangi River and Arani River and tidal influence of the Bay of Bengal.
b) The water in the wetland is mostly of Permanent nature.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater.
d) The pH of the water was observed to be alkaline and recorded up to 8.5.
e) The lake has fresh water with the salinity recorded at 2.183 ppt at the time of sampling.
f) The wetland was observed to be closer to oligotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation. The wetland does receive domestic sewage form the surrounding villages as well as small quantity of industrial effluents.

2.6 Climatic setting

a) Rainfall for the month of December in Thiruvallur was 6 mm.
b) The atmospheric temperature was 28.3°C and the humidity was 61%.

2.7 The area of zone of influence is 32227.7 hectares with a fixed buffer area of 2 kms around the wetland (Map 28.13)

2.8 The major land use around the wetland comprised of

| | | |
|---|---|---|
| Forest 15% (mangrove); | Grassland/scrub land 0%; | |
| Agriculture 10%; | Settlements (rural) 70%; | |
| Settlements (Urban) 0%; | Industrial 0%; | aquaculture farms5% |

2.9 The comparison of the wetland for the years 2005 and 2017 is given in Map 28.12 & 28.13.

**Section III- Biodiversity**

3.1 List of Plant species: 28 species of plants were recorded around the wetland during our visit (Table 28.13).

3.2 List of animal species: 65 faunal species including 4 domestic species were recorded during the survey (Table 28.14a-g).

3.3 Species of Conservation importance: One Near Threatened bird was observed during the survey, while on the basis of secondary data, the fishes recorded form the landing grounds around Pulicat lake were form several threat categories of IUCN, i.e. 44 Near Endangered, Two Near Threatened, One vulnerable and one Endangered (Table 28.14 a-g). It must be noted here that the fisherman also travel into the open sea for fishing.

3.4 Major Plant invasive alien species and extent of invasion: Nine Invasive plants including *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 10 % of the vegetation cover along the backwaters.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is marine and not used for drinking purpose. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland and the water form the wetland penetrates through the ground water interfaces.

4.3 Fishery is a major livelihood along the wetland, which is a community right, there is villagers fishing society.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is a site for recreation and is not frequented by nature enthusiast for bird watching.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 The wetland acts as a sink for sediments.

4.10 The wetland has temples and other religious institutions along its bank and major cultural and religious activities are performed in the wetland.

4.11 The bird enthusiast do visit the wetland for the diversity.

4.12 There are few agriculture activities within the wetland.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a fishery that supports the livelihood of the local fisher community.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity undertaken traditionally. The impact on the ecological health is not assessed.

5.2 The water is not utilized for irrigation.

5.3 Agriculture is undertaken around the wetland and not within the wetland.

5.4 Grazing by the cattle was observed.

5.5 The water is not used for any domestic purposes.

5.6 The wetland is used for bathing by live stock is undertaken, fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.

6.3 There is increase in industrial activities that is impacting the aquaculture fishery mainly the shrimp culture of the region.

6.4 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is included in ESA as well as the wetland of National Importance and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The developmental activities in the form of aquaculture farms should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Release of effluents and solid waste dumping and urbanization needs to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Pulicat Lake


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Table 28.13: List of Plant species recorded along the Pulicat Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattu kasturi | Malvaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 4 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 7 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 8 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 9 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 10 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 11 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 12 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 13 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 14 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 15 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 16 | *Tylophora indica* | Indian Ipecac, Indian ipecacuanha, emetic swallow-wort, vomiting swallow-wort | kalutai-p-palai, naccaruppan, nay-p-palai | Apocynaceae | Native | |
| 17 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 18 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 19 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 20 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 21 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 22 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 23 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 24 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 25 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 26 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 27 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 28 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.14a: List of Insects recorded along the Pulicat Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 28.14b: List of Butterflies recorded along the Pulicat Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 3 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Common Crow | *Euploea core* | Danainae | Common |
| 8 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 9 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 28.14c: List of Odonata recorded along the Pulicat Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 28.14d: List of Fishes recorded form the Pulicat Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 8 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 9 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 12 | *Nematalosa nasus* | Bloch's Gizzard Shad | Pachithalaipodi meen | Clupeidae | LC |
| 13 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.14e: List of Reptiles recorded along the Pulicat Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 28.14f: List of Birds recorded along the Pulicat Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 3 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 10 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 11 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 12 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 13 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 14 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 15 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 16 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 17 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 18 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 19 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 20 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 21 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 22 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 23 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 24 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

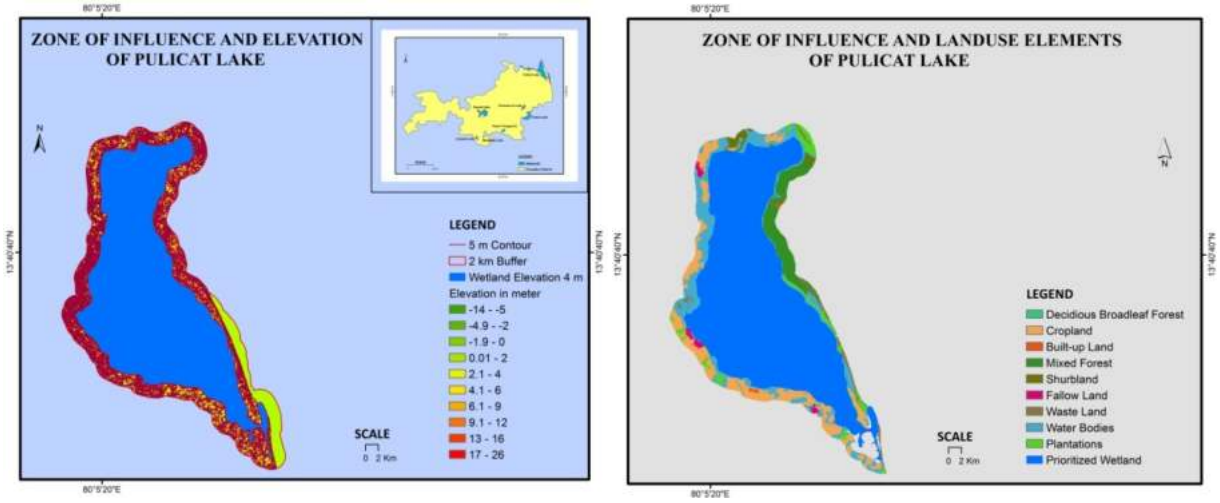
Table 28.14g: List of Mammals recorded along the Pulicat Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 4 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

Map 28.12: Comparative Google imagery for Pulicat Lake




**Map 28.13: The zone of influence around the Pulicat lake.**



**Puzhal Lake**

Puzhal lake is also known as Red hills lake is located in Ponneri taluk of Thiruvallur district, Tamil Nadu. Puzhal Lake is one of the rain-fed reservoirs and a drinking water source for the Chennai city. The Puzhal reservoir was built in 1876 during the British rule in Puzhal Town, The full capacity of the lake is 4,500 acres.

**Lake Survey Number**: 1/1 A

**Section I Identification, Location and Jurisdiction**

1.1 Commonly known as Puzhal Lake (Plate 67).

1.2 Villages that surround the wetland include Puzhal, Banunagar, Kallikuppam, Sakthinagar, Sammyapuram, Oragadam, Thirumulaivazhal, Om shakthi nagar, Naravaikuppam, Gandhinagar and Alamaathi.

1.3 & 1.4 The lake is based in Tiruvallur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 13° 08'07.8" N; 13° 08'19.0" N; 13° 09'52.6" N; 13° 10'00.9" N; 13° 10'06.3" N; 13° 11'05.1" N; 13° 11'13.7" N and Longitude: 080° 09'49.6" E; 080° 10'41.9" E; 080° 11'38.3" E; 080° 11'21.2" E; 080° 11'23.0" E; 080° 11'27.1" E; 080° 10'58.1" E.

1.6 The wetland is a Protected Area by the corporation as it is used for supplying drinking water.

1.7 The wetland comes under the jurisdiction of PWD Tiruvallur division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 1841 hectares (Map 28.14).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Dam/ Reservoir.

2.3 Based on the secondary information the average depth is 5.0 meters for the wetland.

2.4 The elevation of the wetland is 13 to 23 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area.
b) The water in the wetland is mostly of permanent nature with extreme rare occasions of drying, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water also helps in replenishing the groundwater. The over flow also feeds into the Pallar River.
d) The pH of the water was observed to be alkaline and recorded up to 8.5.
e) The lake has fresh water with the salinity recorded at 0.245 ppt at the time of sampling.
f) The wetland was observed to be closer to Oligotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of December in Thiruvallur was 6 mm.
b) The atmospheric temperature varied between 26.7 and 27.8 °C and the humidity was form 52 to 60 %.

2.7 The area of zone of influence is 6240.21 hectares with a fixed buffer area of 2 kms around the wetland (Map 28.15).

2.8 The major land use around the wetland comprised of
Agriculture 10%; Grassland/Scrubland 0%
Forests 0%; Settlements (Rural) 0%
Settlements (Urban) 70%; Industrial 20%

2.9 The comparison of the wetland for the years 2002 and 2017 is given in Map 28.14 & 28.15.

**Section III- Biodiversity**

3.1 List of Plant species: 40 species of plants were recorded around the wetland during our visit (Table 28.15).

3.2 List of animal species: 90 animal species including 4 domestic species were recorded during the survey (Table 28.16a-h).
3.3 Species of Conservation importance: One near Threatened specie of birds were observed during the survey (Table 28.16a-h).
3.4 Major Plant invasive alien species and extent of invasion: 10 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for drinking purpose.
4.2 Agriculture is undertaken around the wetland and the ground water is used for irrigation.
4.3 Fishery is not permitted in the lake however, recreational fishery is practiced.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 Recreational fishery and morning walkers use the bund of the wetland. These are the only activities that are observed.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has several temples and other religious institutions along its bank and major cultural and religious activities are performed in the wetland.
4.11 The site is only majorly used by morning walkers.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a vast diversity of fishery although the commercial fishery is not.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 There is no agriculture undertaken within the wetlands.
5.3 Agriculture is undertaken around the wetland we also observed banana, coconut and sugarcane plantations within the wetlands.
5.4 Grazing by the cattle is undertaken.
5.5 There is no withdrawal of water for agriculture.
5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.
6.3 There is increase in the carp population altering the characteristics of the wetland although there is no fishing activity.
6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.

6.5 The wetland has some amount of idol immersion as well as solid waste dumping and encroachment activities. The siltation is also observed near the inlet as well as the outlet of the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level. However the wetland is given protection by the PWD as it is used for drinking purposes.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a minimal threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland. The wetland is also used for washing of vehicles at a very minimal scale.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Puzhal Lake


Ar.Ebin Horrison and Ar.Lilly Rose (2010) Urban climate mapping for supporting urban planning in Chennai, India. IFOU conference.

Babu Velmurugan, Elif Ipek Cengiz, Palaniswamy Senthilkumaar, Ersin Uysal and Ali Satar (2016) Hematological Parameters of Freshwater Fish Anabas Testudineus after Sublethal Exposure to Cypermethrin. Environmental Pollution and Protection, Vol. 1, No. 1: 32-39.

Johnpaul A., Ragunathan M.B. and Selvanayagam M. (2010) Population dynamics of freshwater molluscs in the lentic eco – systems in and around Chennai. Recent Research in Science and Technology, 2(4): 80-86.

Lilly Rose Amirtham (2016) Urbanization and its impact on Urban Heat Island Intensity in Chennai Metropolitan Area, India. Indian Journal of Science and Technology, Vol 9(5): 1-8. DOI: 10.17485/ijst/2016/v9i5/87201,

Nethaji Mariappan V.E., Balasubramanian A. and Parthiban S. (2017) Geospatial Green Cover Assessment for Chennai using Cartosat data in Changing Climate Scenario.Indian Journal of Natural Sciences. Vol.7. Issue 42: 12255 -12264.

Pradeep Kumar R. and Preethi R. (2017) Assessment of Water Quality and Pollution of Porur, Chembarambakkam and Puzhal Lake. Research J. Pharm. and Tech.; 10(7): 2157-2159.

Raveen R. and Daniel M. (2010) Spatial changes in water quality of urban lakes in Chennai (India)--a case study Journal of Environmental Science & Engineering 52(3):259-264

Saravanan R., Venkatesan S. and Revathi K. (2016) Proc. XV AZRA International Conference “Recent Advances in Life Sciences”, Ethiraj College for Women, Chennai, 11-13 February.Pp. 146 -154.

Swapna J., Rajesh Kanna G., Preethy P Raj, Ashok Kumar S., Elumalai S. and Sangeetha T. (2017) Evaluation of Anti-Cervical Cancer Potential of Polypeptides form Blue Green Algae International Journal of Scientific & Engineering Research Volume 8, Issue 8: 849 - 870.

Yasmeen M.F. and Saboor A. (2016) Qualitative and Quantitative Analysis of Planktonic Fauna of Puzhal Lake, Chennai - A Pre and Post Flood Analysis Indian Journal of Ecology 43 (2): 473-476.

Yasmeen M.F. and Saboor A. (2016) The Capability of Harpacticoid Copepods to Ingest Bacteria as Food. Asian Journal of Multidisciplinary Studies, 4(13): 40- 43.

Table 28.15: List of Plant species recorded along the Puzhal Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nymphaea nouchali* | Blue water lily, blue lotus of India | Neelambal | Nymphaeaceae | Native | LC |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 6 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Crotalaria pallida* | Smooth Rattlepod | --- | Fabaceae | Native | NA |
| 10 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 11 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 12 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, | Cucurbitaceae | Native | NA |
| 15 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 16 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 17 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 18 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 19 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 20 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 21 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 22 | *Ipomoea campanulata* | Tambar vel | | Convolvulaceae | Invasive | NA |
| 23 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 24 | *Physalis angulata* | Cutleaf Ground Cherry | | Solanaceae | Native | LC |
| 25 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 26 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 27 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 28 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 29 | *Persicaria chinensis* | Chinese Knotweed | | Polygonaceae | Native | NA |
| 30 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 31 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 32 | *Breynia vitis-idaea* | Mountain Coffee Bush | | Phyllanthaceae | Native | NA |
| 33 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 34 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 35 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, | Commelinaceae | Native | LC |
| 36 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 37 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 38 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 39 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 40 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.16a: List of Insects recorded along the Puzhal Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Spittle bug | *Clovia sp.* | Aphrophoridae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 28.16b: List of Butterflies recorded along the Puzhal Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Common Grass Yellow | *Eurema hecabe* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 9 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 10 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 11 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 12 | Common Crow | *Euploea core* | Danainae | Common |
| 13 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 14 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 15 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 16 | Danaid Eggfly | *Hypolimnas misippus* | Nymphalinae | Common |

Table 28.16c: List of Odonata recorded along the Puzhal Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 7 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 28.16d: List of Arachnida species recorded along the Puzhal Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 28.16e: List of Fishes recorded form the Puzhal Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 10 | *Anabas testudineus* | Climbing erch | Panangottai meen, | Anabantidae | DD |
| 11 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |
| 12 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 13 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |
| 14 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 15 | *Stolephorus commersonii* | Commerson's anchovy | Nethili | Engraulidae | NE |
| 16 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 17 | *Polynemus plebeius* | Thread fin | Valanakala | Polynemidae | NE |
| 18 | *Notopterus notopterus* | Featherback | Chotta vaalai meen | Notopteridae | LC |
| 19 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |
| 20 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 28.16f: List of Reptiles recorded along the Puzhal Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

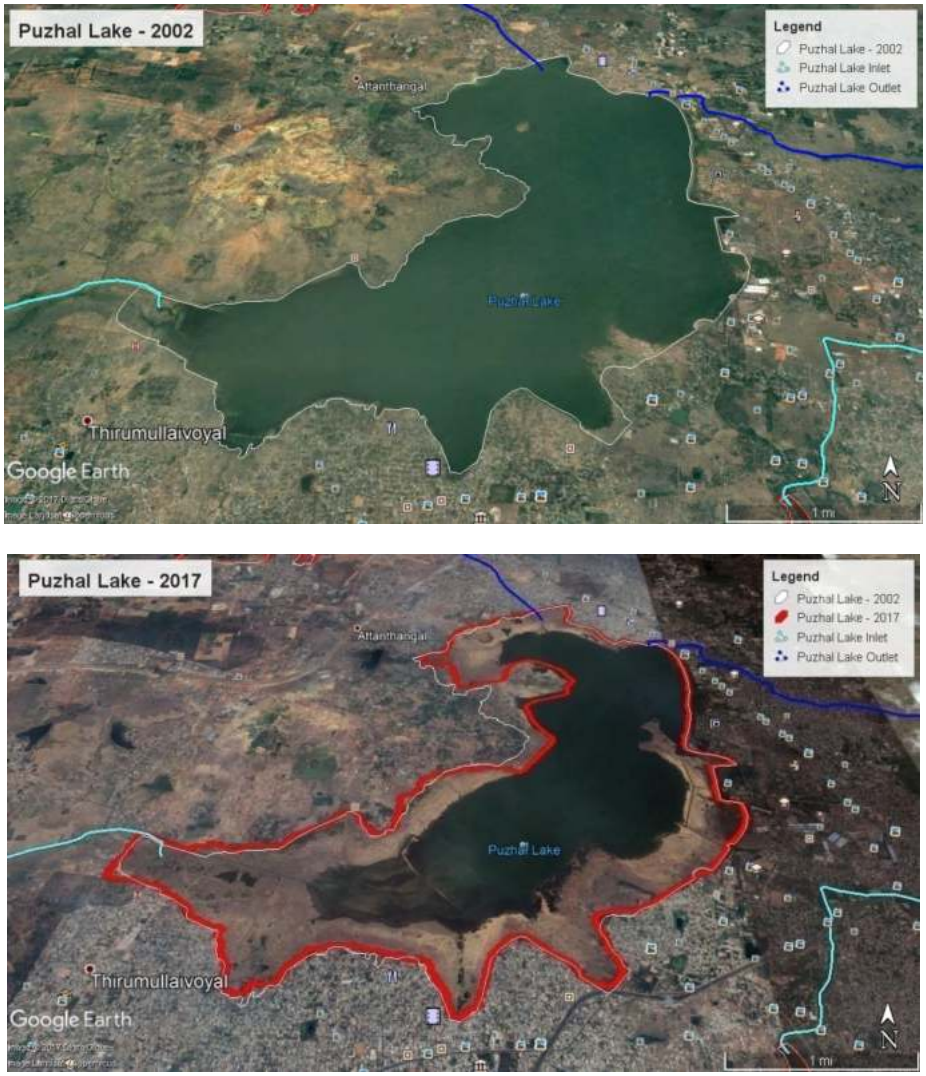
Table 28.16g: List of Birds recorded along the Puzhal Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 4 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 8 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 9 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 12 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 13 | Caspian Tern | *Hydroprogne caspia* | Laridae | Least Concern |
| 14 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 15 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 16 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 17 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 18 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 19 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 20 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 21 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 22 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 23 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 24 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 25 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 26 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 27 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 28 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 29 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 30 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 31 | Scaly-breasted Munia | *Lonchura punctulata* | Estrildidae | Least Concern |
| 32 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

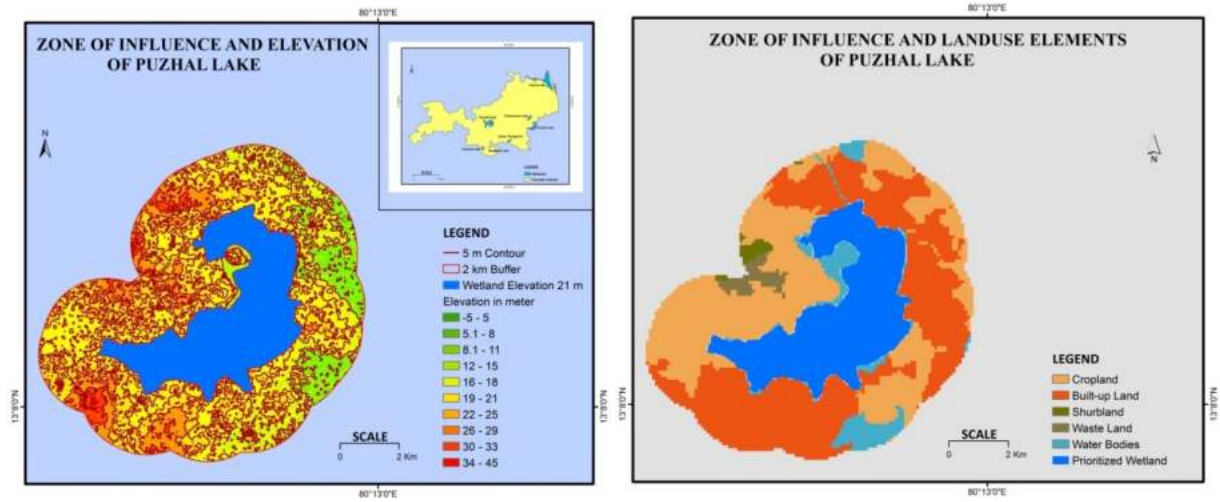
Table 28.16h: List of Mammals recorded along the Puzhal Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 3 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 4 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 28.14: Comparative Google imagery for Puzhal Lake**




**Map 28.15: The zone of influence around the Puzhal lake.**



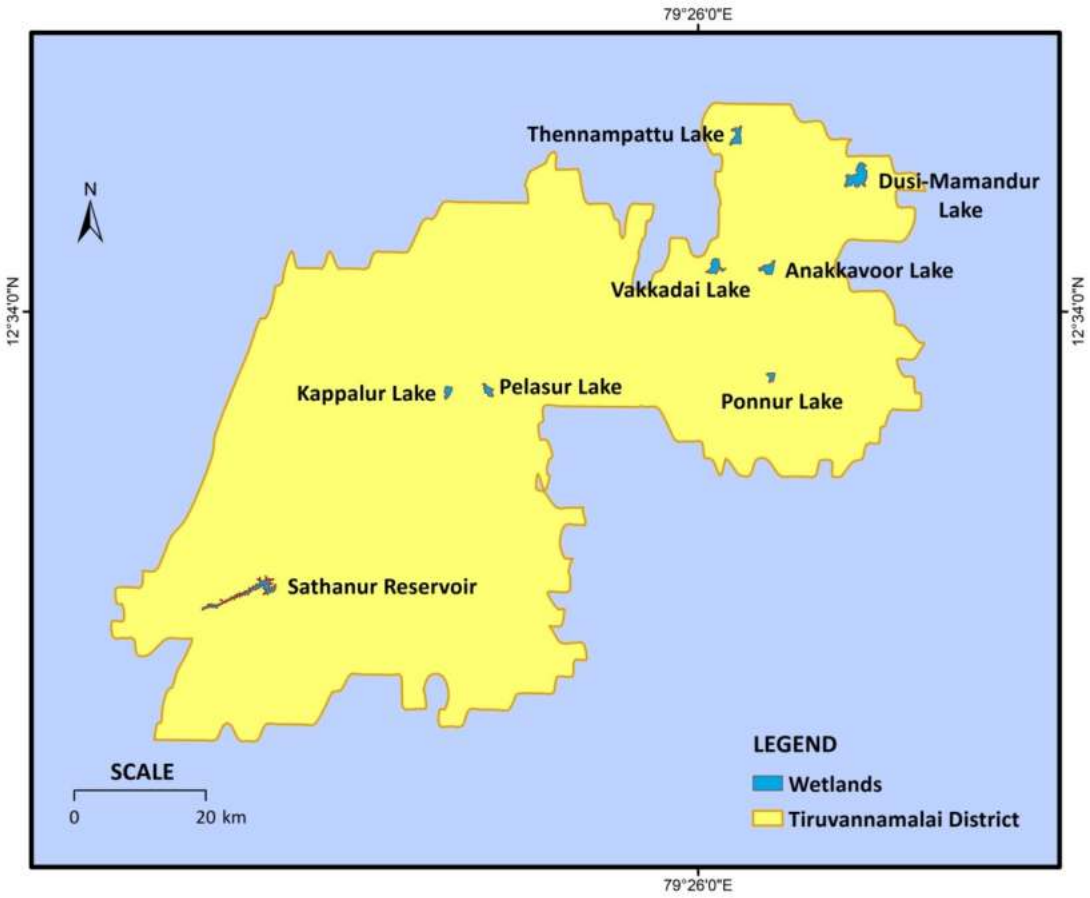
## 29. Tiruvannamalai District

### 1. Introduction

Tiruvannamalai District is known for eternal peace, with the proud possession of the sacred shrine of Lord Arunachaleswara and Ashrams. It had started functioning as a separate District form 30th September 1989, on bifurcation of the erstwhile North Arcot District. Tiruvannamalai District has an area of 6,191 $km^2$. It is bounded on the north by Vellore District, on the east by Kanchipuram District, on the south by Villupuram District, and on the west by Dharmapuri and Krishnagiri districts. One sixth of the area of this district is covered by reserve forest and hills which is part of Eastern Ghats under Javvadhu Hills. The important hills in this district are Tiruvannamalai (2668 ft MSL), Javvadhu hills (2500 ft MSL) and Kailasagiri (2743 ft MSL).

Total area under wetland is 48130 ha, which includes 262 small wetland (<2.25 ha). Lakes/Ponds occupy 44.56% of wetland area. The second major wetland type is Tanks/Ponds. There are 1362 Tanks/Ponds with 20661 ha area (42.93%) in the district. The other wetland types are; Reservoirs (4.58 %) and River/Stream (7.0 %).

SACON during 2004 had prioritized six wetlands form Tiruvannamalai district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these six wetlands to assess its present potential for conservation. (Map29.1). Two more wetlands were added for the study based on the decadal changes in the google imagery.




**Map 29.1: Wetlands of Tiruvanamalai district assessed for Prioritization**

**Observations**

Of the eight wetlands selected in the district, Dusi Mamandoor Lake followed by Shatanur reservoir is the largest while Ponnur lake is the smallest of the wetlands. Around the wetlands, we recorded 161 plant species both aquatic and terrestrial including 18 invasive species (Table 29.1). The faunal components totaled 171 species with the representation of 66 bird species including the wetland birds. During the field study we observed Sathanur reservoir and Vakkadai wetland as oligotrophic while the other wetlands were Mesotrophic in status (Table 29.2). The water quality was comparatively better in Vakkadai wetland than the other wetlands. The soil is regularly hydrated annually and hence it forms a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Thennampattu Lake. In addition to the release of sewage agricultural and aquacultural practices also influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Pelasur Lake
2. Anakkavoor Lake
3. Sathanur Reservoir
4. Ponnur Lake
5. Dusi Mamandoor Lake
6. Vakkadai Lake
7. Kappalur Lake
8. Thennampattu Lake

Table 29.1: The flora and fauna recorded form the wetlands of Tiruvanamalai District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ponnur Lake | 46 (10) | 3 | 9 | 3 | 1 | 13 | 3 | 2 | 22 | 0 |
| 2 | Thennampattu Lake | 66 (12) | 7 | 9 | 18 | 2 | 11 | 0 | 2 | 23 | 3 |
| 3 | Vakkadai Lake | 38 (8) | 14 | 6 | 14 | 3 | 19 | 0 | 2 | 34 | 4 |
| 4 | Kappalur Lake | 50 (8) | 9 | 10 | 9 | 2 | 13 | 2 | 2 | 37 | 5 |
| 5 | Dusi Mamandoor Lake | 43 (6) | 5 | 9 | 13 | 1 | 13 | 1 | 2 | 26 | 4 |
| 6 | Sathanur Reservoir | 44 (8) | 6 | 4 | 7 | 0 | 14 | 0 | 2 | 18 | 3 |
| 7 | Pelasur Lake | 34 (5) | 5 | 4 | 3 | 0 | 5 | 0 | 1 | 22 | 5 |
| 8 | Anakkavoor Lake | 35 (7) | 6 | 6 | 9 | 0 | 7 | 0 | 1 | 29 | 4 |
| | Total | 161 (18) | 20 | 18 | 32 | 3 | 26 | 3 | 2 | 66 | 6 |

Table 29.2: The water and soil quality assessed form the wetlands of Tiruvanamalai District

| **District Name** | Tiruvannamalai | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Wetland Name** | Anakkavoor Lake | Dusi Mamandur Lake | Kappalur Lake | Pelasur Lake | Ponnur Lake | Sathanur Reservoir | Thennampattu Lake | Vakkadai |
| **Wetland area (ha)** | 257 | 704 | 154 | 163 | 113 | 633 | 278 | 309 |
| **Buffer Area in Hectare (ha)** | 2842.28 | 3883.45 | 2325.03 | 2506.09 | 2237.94 | 7303.33 | 3064.91 | 3085.92 |
| **Air Temperature °C** | 32 | 33.2 | 30 | 33 | 32 | 35.5 | 38.6 | 27.2 |
| **Water Temperature °C** | 32 | 30.6 | 28.4 | 31.7 | 28.9 | 31.6 | 36.1 | 27.5 |
| **Humidity %** | 43 | 49 | 41 | 48 | 61 | 35 | 34 | 64 |
| **Nutrients in Water** | Mesotrophic | Mesotrophic | Mesotrophic | Mesotrophic | Mesotrophic | Oligotrophic | Mesotrophic | Oligotrophic |
| **Water pH** | 8.2 | 9.1 | 9.1 | 8.89 | 9.5 | 8.8 | 9.7 | 8.9 |
| **Water TDS ppm** | 837 | 269 | 121 | 622 | 141 | 436 | 495 | 212 |
| **Water Conductivity ppm** | 1179 | 496 | 317 | 875 | 200 | 360 | 565 | 773 |
| **Light Penetration cms** | 37 | 103 | 150 | 17 | 31 | 84 | 55 | 122 |
| **Water Salinity ppt** | 0.582 | 0.245 | 0.174 | 0.43 | 0.102 | 0.317 | 0.353 | 0.138 |
| **DO mg/L** | | 5.49 | 9.96 | 1.73 | 10.37 | 8.33 | 7.32 | 5.89 |
| **PO4P mg/L** | 0.008 | 0.003 | 0.077 | 0.003 | 0.005 | 0.013 | 0.000 | 0.002 |
| **Water Na ppm** | 458 | 53.9 | 22.3 | 442 | 11.15 | 70.8 | 113 | 55.85 |
| **Water K ppm** | 29.4 | 3.6 | 3 | 7.7 | 2.7 | 7.1 | 6.1 | 3.85 |
| **Water Li ppm** | 0.5 | 0 | 0 | 0.3 | 0 | 0.1 | 0.1 | 0 |
| **Water Ca ppm** | 97.2 | 22.95 | 14.4 | 108.4 | 13.45 | 38.6 | 34.3 | 21.2 |
| **Soil Colour code** | 7.5 YR 4/2 | 2.5Y 5/3 | 10YR 6/6 | 2.5YR 5/3 | 10YR 6/4 | 10YR 5/8 | 10YR 5/4 | 10YR 5/4 |
| **Soil Colour** | Brown | Light Olive Brown | Brownish Yellow | Reddish Brown | Light Yellowish Brown | Yellowish Brown | Yellowish Brown | Yellowish Brown |
| **Soil pH** | 7.81 | 7.55 | 7.33 | 7.64 | 7.4 | 7.08 | 7.48 | 7.72 |
| **Soil TDS ppm** | 561 | 149 | 107 | 461 | 49.7 | 120 | 180 | 275 |
| **Soil Conductivity ppm** | 791 | 210 | 149.4 | 651 | 70.3 | 168.8 | 251 | 388 |
| **Soil Salinity ppt** | 387 | 0.102 | 0.074 | 0.316 | 0.039 | 0.083 | 0.122 | 0.187 |
| **Soil Na ppm** | 24 | 18.3 | 5.6 | 23.1 | 1.8 | 13.9 | 8.3 | 16.8 |
| **Soil K ppm** | 12.6 | 4.5 | 3.8 | 7.7 | 3.8 | 3.3 | 3.2 | 6.4 |
| **Soil Li ppm** | 0.2 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0.1 |
| **Soil Ca ppm** | 48.7 | 14.2 | 8.2 | 37.4 | 5.7 | 10.9 | 19.8 | 23.7 |

**Anakkavoor Lake**

**Lake Survey Number**: 805

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Anakkavur Eri (Plate 68).

1.2 Villages that surround the wetland include Irugal, Tavasi, Sengadu, Athikulam, Vilarupattu, Oorrukudi.

1.3 & 1.4 The lake is based in Seyyara taluka in Tiruvannamalai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 38'03.4" N; 12° 38'02.9" N; 12° 37'57.6" N; 12° 37'54.2" N; 12° 37'27.2" N and Longitude: 079° 32'15.2" E; 079° 32'13.7" E; 079° 32'13.5" E ; 079° 32'12.7" E; 079° 32'10.1" E.

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tiruvannamalai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 257 hectares (Map 29.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 3 to 4 meters for the wetland.

2.4 The elevation of the wetland is 93 to 106 meters (asl).

2.5 Water regime

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and water form three adjoining lakes, the over flow water goes to Seyyar River.
b) The water in the wetland is mostly of intermittent in nature.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishing the groundwater and again joins the Seyyar River.
d) The pH of the water was observed to be alkaline and recorded up to 8.2.
e) The lake has fresh water with the salinity recorded at 582 ppm at the time of sampling.
f) The wetland had only 5% of water as compared to its area and the aquatic vegetation could not be determined as the wetland was nearly dry despite fishing activity in the minimal waters was observed.

2.6 Climatic setting

a) Rainfall for the month of August in Tiruvannamalai was 0.0 mm.
b) The atmospheric temperature was 31.9 and 32.0 °C and the humidity was 43%

2.7 The area of zone of influence is 2842.28 hectares with a fixed buffer area of 2 kms around the wetland (Map 29.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0 %; | Grasslands and scrublands 0%; |
| Agriculture 90%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9. The comparison of the wetland for the years 2010 and 2018 is given in Map 29.2 & 29.3.

**Section III- Biodiversity**

3.1 List of Plant species: 32 species of plants were recorded around the wetland during our visit (Table 29.3).

3.2 List of animal species: 61 faunal species excluding 3 domestic species were recorded during the survey (Table 29.4a-h).

3.3 Species of Conservation importance: threatened species were not observed during the survey (Table 29.4a-h).

3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The Local Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is undertaken on a minor scale. Commercial fishing is undertaken only seasonally on contract form the PWD. Aquaculture is also undertaken by the locals.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation only the locals come for recreational fishing.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge the overflow replenishes the Seyyar River.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There are no agriculture or plantation activities within the wetland on a large scale.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although the commercial fishery is restricted.
4.15 There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is limited commercial fishing activity and some recreational fishery is undertaken by local children and adults during their free time.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland and within the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland does not have any idol immersion and encroachment activities are observed to a very small extent.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages. The encroaching agriculture within the wetland has to be controlled or prohibited as it has just begun.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Anakvaoor Lake

Table 29.3: List of Plant species recorded along the Anakkavoor Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 9 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 10 | *Terminalia bellirica* | Baheda, Belliric Myrobalan, Bastard myrobalan, | tanri | Combretaceae | Native | |
| 11 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, | Cucurbitaceae | Exotic | NA |
| 12 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 13 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 16 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 17 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 18 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 19 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 20 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 21 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 22 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 23 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 24 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 25 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 26 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 27 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 28 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 29 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 30 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 31 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 32 | *Enteropogon dolichostachyus* | Finger grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.4a: List of Arthropoda species recorded along the Anakkavoor Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |
| 4 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 5 | Orange Spider Wasp | *Cryptocheilus bicolor* | Pompilidae |

Table 29.4b: List of Diplopoda species recorded along the Anakkavoor Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 29.4c: List of Butterfly and moth species recorded along the Anakkavoor Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 5 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 6 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 7 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 8 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 9 | Heliotrope Moth | *Utetheisa pulchelloides* | Erebidae | Common |

Table 29.4d: List of Odonata species recorded along the Anakkavoor Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 6 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |

Table 29.4e: List of Fish species recorded form the Anakkavoor Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.4f: List of Reptile species recorded along the Anakkavoor Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 29.4g: List of Bird species recorded along the Anakkavoor Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 5 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 6 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 7 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 8 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 9 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 10 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 11 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 12 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 13 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 14 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 15 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 16 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 17 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 18 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 19 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 22 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 23 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 24 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 25 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 26 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 27 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 28 | Loten's Sunbird | *Cinnyris lotenia* | Nectariniidae | Least Concern |
| 29 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |

Table 29.4h: List of Mammals species recorded along the Anakkavoor Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

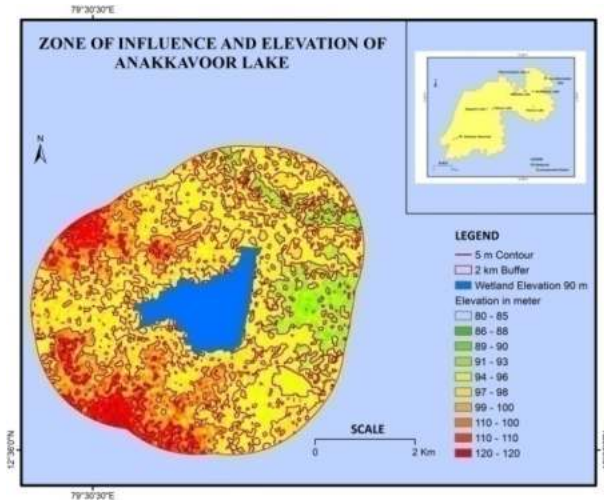
**Map29.2: Comparative Google images for Anakkavoor Lake**

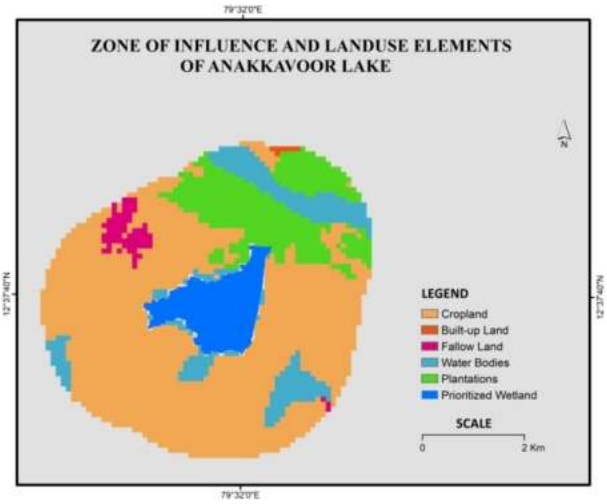






**Map 29.3: Zone of Influence around the Anakkavoor Lake**



**Dusi Mamandoor Lake**

**Lake Survey Number**: 96/1, 97/1, 1088 & 504.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Dusimamandoor Lake or Mamandoor Lake (Plate68)

1.2 Villages that surround the wetland include Dusi, Mamandoor, Azhyangalpattu, Chellaperumpulimedu, Cholavaram, Chithathoor, Harigarapakkam, Narasamangalam, Ayyankulam, Namandi.

1.3 & 1.4 The lake is based in Tiruvannamalai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 44'26.9" N; 12° 44'24.9" N; 12° 44'21.6" N; 12° 45'07.8" N and Longitude: 079° 39'22.7" E; 079° 39'29.9" E; 079° 39'31.7" E; 079° 39'51.8" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tiruvannamalai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 640 hectares (Map 29.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category Seasonal Intermittant lake.

2.3 Based on the secondary information the average depth is 7 meters for the wetland.

2.4 The elevation of the wetland is 83 to 90 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area as well as receives water form the Cheyyar River system.

b) The water in the wetland is mostly of intermittent nature as the wetland is mostly dependant on the rainfall and runoff waters.

c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater. The over flow also feeds into the Arapakkam lake.

d) The pH of the water was observed to be alkaline and recorded form 8.3 to 9.1.

e) The lake has fresh water with the salinity recorded at 0.245 ppt at the time of sampling.

f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of February in Tiruvannamalai District was 0.0 mm.

b) The atmospheric temperature was 33.2 °C and the humidity was form 44 to 49%

2.7 The area of zone of influence is 3883.45 hectares with a fixed buffer area of 2 kms around the wetland (Map 29.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland and shrubland 10% |
| Agriculture 90%; | Settlements (rural) 0% |
| Settlements (Urban) 0%; | Industrial 0%. |

2.9. The comparison of the wetland for the years 2005 and 2017 is given in Map 29.4 & 29.5.

**Section III- Biodiversity**

3.1 List of Plant species: 39 species of plants were recorded around the wetland during our visit ( Table 29.5).

3.2 List of animal species: 74 animal species including 3 domestic species were recorded during the survey (List attached - Table 29.6a-i).

3.3 Species of Conservation importance: Two near Threatened species of fish were observed during the survey (Table 29.6a-i).

3.4 Major Plant invasive alien species and extent of invasion: Six invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. But the locals have borewells and the local panchayat provides borewell water for their daily needs.

4.2 Agriculture is undertaken around the wetland and witnin the wetland major portion of the lake water is used for irrigation.

4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is done by very few families which is a community right. The fish seed is introduced by the PWD and mostly comprises of the common carps.

4.4 The wetland is used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for recreation and is not frequented by nature enthusiast for bird watching. The locals only frequent it feed the fish as an entertainment. The wetland is in the proximity of Panchapandavas Palace (Caves) where local tourist visit and also visit the wetlands.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge and overflow form the wetlands also contributes to the Arapakkam Lake and agriculture fields.

4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The site is only used majorly locals for their livelihood and occasional the cave tourist.

4.12 There are agriculture and plantation activities within the wetland but fishing is also the major livelihood.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a fishery although it is not a major commercial activity.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity and some recreational fishery is undertaken by local children and adults during their free time.

5.2 Major portion of the water is utilized for irrigation.

5.3 Agriculture is undertaken around and within the wetland.

5.4 Grazing by the cattle was observed.

5.5 The water is not used for domestic purposes like washing clothes and utensils.

5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does show major change in the pattern of water inflow and outflow.

6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.

6.3 There is increase in agricultural activities that are growing into the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland however the density is less.

6.5 The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a minimal threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland. Increasing agriculture within the wetland is a major concern.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Change in the land use pattern around the wetland needs to be regulated. The water form the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for DusiMamandur Lake**


Bright R. and Kanagappan M. (2016) In Vitro antioxidant activity of selected aquatic weeds of Kanyakumari District of South India, *World Journal of Pharmacy and Pharmaceutical Sciences*, Volume 5, Issue 6, Pp. 1090-1108, ISSN: 2278-4357.

Ilamaran R. and Kumaran S. (2017) Lab Scale Design and Performance Study of Filter Media: A Potential Application in Irrigation Run off, Indian Journal of Science and Technology, Vol 10(16), DOI: 10.17485/IJST/2017/v10i16/113213, April 2017, ISSN: 0974-5645, Pp. 1-12.

Jaikumar M. (2012) A Review on Water Hyacinth (Eichhornia crassipes) and Phytoremediaton to treat Aqua pollution in Velachery lake, Chennai - Tamil Nadu, *International Journal of Recent Scientific Research*, Vol. 3, Issue, 2, Pp. 95-102, February, 2012, ISSN: 0976-3031.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, Pp. 532.


Table 29.5: List of Plant species recorded along the Dusimamandur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 3 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 4 | *Polycarpaea corymbosa* | Oldman's Cap | Nilaisadachi | Caryophyllaceae | Native | NA |
| 5 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattu kasturi | Malvaceae | Native | NA |
| 6 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 7 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 8 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 11 | *Crotalaria pallida* | Smooth Rattlepod | --- | Fabaceae | Native | NA |
| 12 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 15 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 16 | *Ageratina adenophora* | Catweed, crofton weed, eupatory, Mexican devil, sticky eupatorium, | | Asteraceae | Naturalized | |
| 17 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 18 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 19 | *Evolvulus alsinoides* | Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 20 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 21 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 22 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, Pulinagam | Martyniaceae | Native | NA |
| 23 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 24 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 25 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 26 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 27 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 28 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 29 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 30 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 31 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 32 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 33 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 34 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 35 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 36 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 37 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 38 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 39 | *Eragrostis amabilis* | Japanese Lovegrass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.6a: List of Insects recorded along the Dusimamandur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |

Table 29.6b: List of Butterflies recorded along the Dusimamandur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 5 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 8 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 9 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 10 | Double-Branded Crow | *Euploea sylvester coreta* | Danainae | Common |
| 11 | Common Crow | *Euploea core* | Danainae | Common |
| 12 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 13 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 29.6c: List of Dragonflies recorded along the Dusimamandur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |

| | | | | |
|---|---|---|---|---|
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 4 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 5 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 6 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 7 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 8 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 29.6d: List of Arachnida recorded along the Dusimamandur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 29.6e: List of Fishes recorded form the Dusimamandur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 11 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |
| 12 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 13 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.6f: List of Amphibians recorded form the Dusimamandur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

Table 29.6g: List of Reptiles recorded along the Dusimamandur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 29.6h: List of Birds recorded along the Dusimamandur Lake

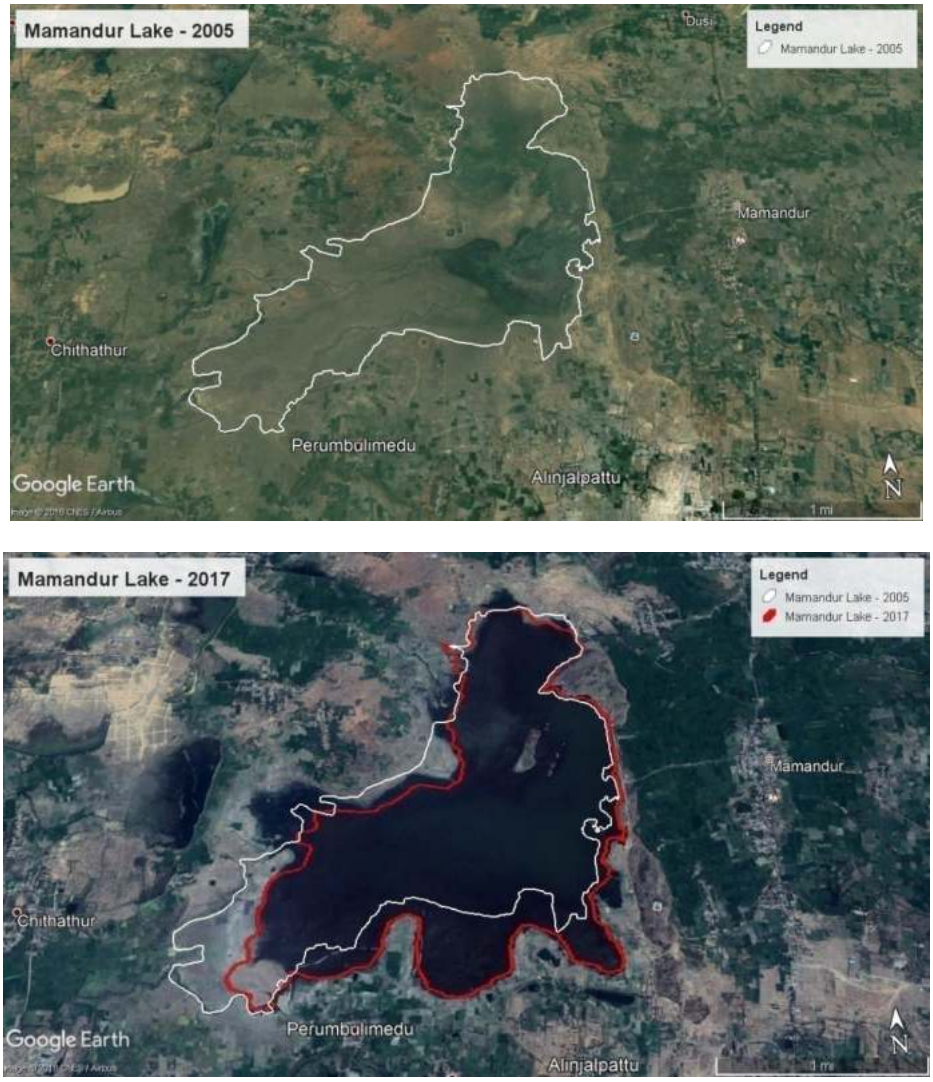
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 4 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 5 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 6 | Shikra | *Accipiter badius* | Accipitridae | Least Concern |
| 7 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 8 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 9 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 10 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 11 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 12 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 13 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 14 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 15 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 16 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 17 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 18 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 19 | Oriental skylark | *Alauda gulgula* | Alaudidae | Least Concern |
| 20 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 21 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 22 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 23 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 24 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 25 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |
| 26 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

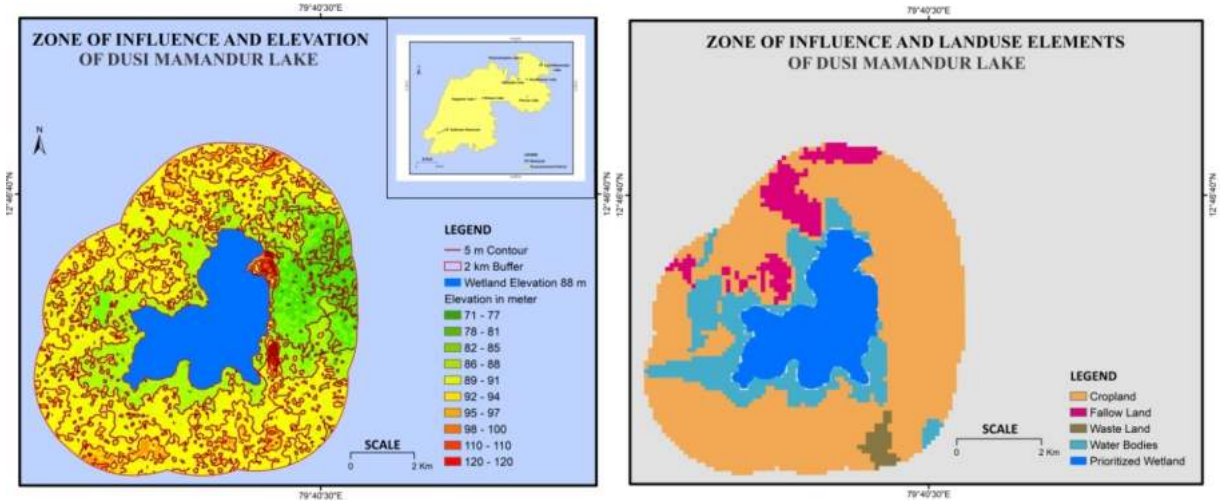
Table 29.6i: List of Mammals recorded along the Dusimamandur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 29.4: Comparative Google imagery for DusimamandurLake**




**Map 29.5: The zone of influence around the Dusimamandur lake.**



**Kappalur Lake**

**Lake Survey Number**: 566

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kappalur Lake (Plate 69).
1.2 Villages that surround the wetland include Kappalur, Kappalur MGR colony, Kappalur Keela colony, Eechankadu, Kappalur Mettucolony, Kolakotta, Kappalur Anna nagar, China Kappalur.
1.3 & 1.4 The lake is based in Tiruvannamalai District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 12° 27'31.1" N; 12° 27'47.7" N; 12° 27'49.5" N; 12° 27'52.6" N; 12° 27'52.4" N; and Longitude: 079° 05'45.5" E; 079° 05'46.8" E; 079° 05'42.0" E; 079° 05'26.5" E; 079° 05'22.8" E;
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD Tiruvannamalai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 154 hectares (Map 29.6).
2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category Seasonal intermittent lake.
2.3 Based on the secondary information the average depth is 2.0 meters for the wetland.
2.4 The elevation of the wetland is 187 to 208 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and the Thenpennai River tributary.
   b) The water in the wetland is mostly of intermittant nature with presence of water for nearly eight to nine months, as the wetland is mostly dependant on the rainfall and runoff waters.
   c) The water also helps in the replenishing the groundwater. The over flow also feeds into the agriculture Rivers and the lakes Kangaynoor and Putharampattu.
   d) The pH of the water was observed to be alkaline and recorded form 9.1 to 9.4.
   e) The lake has fresh water with the salinity recorded at 0.174 ppt at the time of sampling.
   f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation.
2.6 Climatic setting
   a) Rainfall for the month of February in Tiruvannamalai District was 0.0 mm.
   b) The atmospheric temperature varied between 29.4 to 30.0 °C and the humidity was 40 to 44 %
2.7 The area of zone of influence is 2352.03 hectares & varies between 0.01 to 0.93 kms (Map 29.7).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agriculture 80%; | Settlements (Rural) 10%; |
| Settlements (Rural) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2007 and 2017 is given in Map 29.6 & 29.7.

**Section III- Biodiversity**

3.1 List of Plant species: 49 species of plants were recorded around the wetland during our visit ( Table 29.7).
3.2 List of animal species: 89 animal species including 4 domestic species were recorded during the survey (List attached - Table 29.8a-i).
3.3 Species of Conservation importance: One near Threatened specie of birds and two fish species were observed during the survey (Table 29.8a-i).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around and within the wetland and the ground and wetland waters is used for irrigation.

4.3 Commercial Fishery is not in the lake however recreational fishery is practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 Recreational fishery people use the bund of the wetland.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has several temples and other religious institutions around the wetland and major cultural and religious activities are performed in the wetland.

4.11 There are no agriculture or plantation activities within the wetland.

4.12 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.14 The wetland supports a vast diversity of fishery although the commercial fishery is not.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There are invasive plant species that is changing the habitat of the wetland however the density is less.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a minimal threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland. The wetland is also used for washing of vehicles at a very minimal scale.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Kappalur Lake

Kumarasamy Sampath (2015) Knowledge and Opinion of Farming Community about Irrigation Tanks - A Study form Tiruvannamalai District of Tamil Nadu State, India, Journal of Water Sustainability, Volume 5, Issue 1, March 2015, 21-30.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, Pp. 532.

Table 29.7: List of Plant species recorded along the Kappalur Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 3 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 4 | *Polycarpaea corymbosa* | Oldman's Cap | Nilaisadachi | Caryophyllaceae | Native | NA |
| 5 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 8 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 9 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 10 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 11 | *Crotalaria globosa* | Spherical Rattlepod | | Fabaceae | Native | |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 15 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 16 | *Trianthema portulacastrum* | Desert Horse Purslane | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 17 | *Alangium salviifolium* | Sage leaved Alangium | Alandi | Cornaceae | Native | NA |
| 18 | *Hedyotis articularis* | Jointed Hedyotis | Kudal churiki | Rubiaceae | Native | NA |
| 19 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 20 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 21 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 22 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 23 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 24 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 25 | *Gymnema sylvestre* | Cowplant | Cirukurinchchan | Apocynaceae | Native | NA |
| 26 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 27 | *Heliotropium ellipticum* | Common Heliotrope, Potato weed, Caterpillar weed | | Heliotropiaceae | Native | |
| 28 | *Evolvulus nummularius* | Roundleaf Bindweed, Agracejo rastrero | Elikaadu ilai | Convolvulaceae | Native | NA |
| 29 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 30 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 31 | *Datura innoxia* | Datura | Vellammattai | Solanaceae | Invasive | NA |
| 32 | *Dicliptera cuneata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 33 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 34 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 35 | *Boerhavia repens* | Erect Spiderling | | Nyctaginaceae | Invasive | NA |
| 36 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 37 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 38 | *Aerva javanica* | Kapok bush | | Amaranthaceae | Native | NA |
| 39 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 40 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 41 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 42 | *Agave americana* | Agave, Century plant | | Asparagaceae | Introduced | |
| 43 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 44 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 45 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 46 | *Cyperus rotundus* | Common nut sedge, coco grass, nutgrass, purple nutsedge | Korai, korai kilangu, muthakasu | Cyperaceae | Native | LC |
| 47 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 48 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 49 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.8a: List of Insects recorded along the Kappalur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 7 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 8 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 9 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 29.8b: List of Butterflies recorded along the Kappalur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Plain Palm Dart | *Cephrenes acalle* | Hesperiinae | Common |
| 2 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 7 | Common Crow | *Euploea core* | Danainae | Common |
| 8 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 9 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 29.8c: List of Dragonflies recorded along the Kappalur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 6 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 7 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 8 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |
| 10 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |

Table 29.8d: List of Arachnida recorded along the Kappalur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 29.8e: List of Fishes recorded form the Kappalur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 9 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 12 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |
| 13 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.8f: List of Amphibians recorded form the Kappalur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Pond Forg | *Euphlyctis hexadactylus* | Dicroglossidae | LC |
| 2 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.8g: List of Reptiles recorded along the Kappalur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 29.8h: List of Birds recorded along the Kappalur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cotton Pygmy-goose | *Nettapus coromandelianus* | Anatidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Northern Pintail | *Anas acuta* | Anatidae | Least Concern |
| 4 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 5 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 6 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 7 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 8 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 9 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 10 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 11 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 12 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 13 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 14 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 15 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 16 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 17 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 18 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 19 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 20 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 21 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 22 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 23 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 24 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 25 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 26 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 27 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 28 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 29 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 30 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 31 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 32 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 33 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 34 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 35 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 36 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 37 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 29.8i: List of Mammals recorded along the Kappalur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

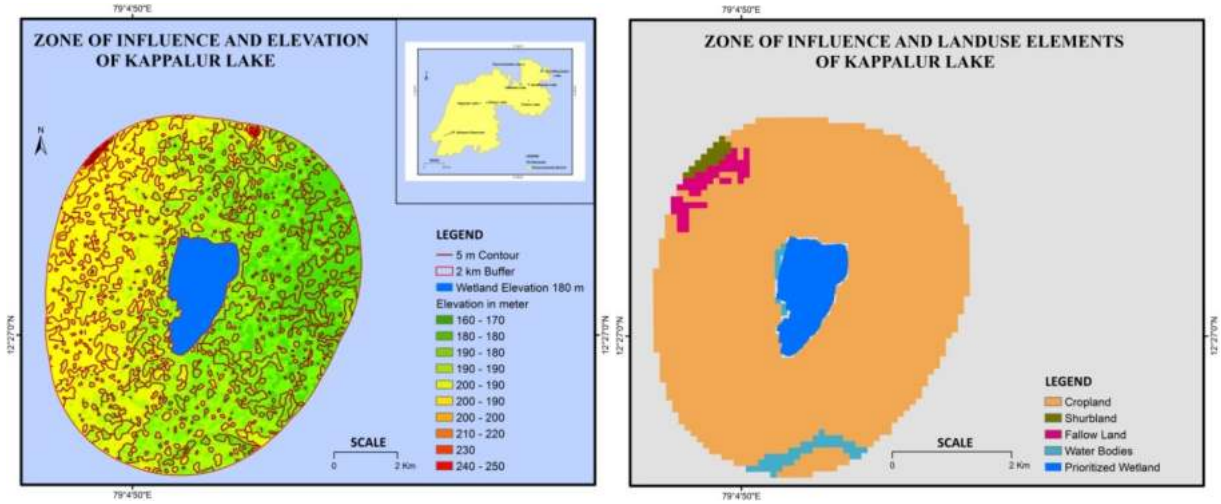
**Map 29.6: Comparative Google imagery for Kappalur Lake**







**Map 29.7: The zone of influence around the Kappalur lake.**



**Pelasur Lake**

**Lake Survey Number**: 298

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Pelasur Periya Eri (Plate 69) other name is Easa Periya eri.

1.2 Villages that surround the wetland include Thennampattu, Nayanthangal, Mottur, Natteri, Ranthan, Thiruvenkadathan kudisai.

1.3 & 1.4 The lake is based in Polur taluka in Tiruvannamalai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 27'41.9" N; 12° 27'48.7" N; 12° 27'49.6" N; 12° 28'02.8" N; 12° 27'58.0" N and Longitude: 079° 09'01.8" E; 079° 08'51.4" E; 079° 08'48.1" E ; 079° 08'33.4" E; 079° 08'37.1" E.

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tiruvannamalai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 163 hectares (Map 29.8).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 3 to 4 meters for the wetland.

2.4 The elevation of the wetland is 167 to 178 meters (asl).

2.5 Water regime

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and water form 26 adjoining lakes.
b) The water in the wetland is mostly of intermittent in nature.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater and again joins the Mandakolatur eri.
d) The pH of the water was observed to be alkaline and recorded up to 8.89.
e) The lake has fresh water with the salinity recorded at 0.43 ppt at the time of sampling.
f) The wetland had only 5% of water as compared to its area and the aquatic vegetation could not be determined as the wetland was nearly dry despite fishing activity in the minimal waters was observed.

2.6 Climatic setting

a) Rainfall for the month of August in Tiruvannamalai was 0.0 mm.
b) The atmospheric temperature was 33.0 °C and the humidity was 48%.

2.7 The area of zone of influence is 2506.09 hectares with a fixed buffer area of 2 kms around the wetland (Map 29.9).

2.8 The major land use around the wetland comprised of
Forest 0 %; Grasslands and scrublands 0%,
Agriculture 85%, Settlements (rural) 15%
Settlements (Urban) 0% Industries 0%

2.9 The comparison of the wetland for the years 2007 and 2018 is given in Map 29.8 & 29.9.

**Section III- Biodiversity**

3.1 List of Plant species: 34 species of plants were recorded around the wetland during our visit (Table 29.9).

3.2 List of animal species: 45 faunal species excluding four domestic species were recorded during the survey (Table 29.10 a-g).

3.3 Species of Conservation importance: One threatened species of bird and two fish species were observed during the survey (Table 29.10a-g).

3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The Local Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.

4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is undertaken on a minor scale. Commercial fishing is undertaken only seasonally on contract form the PWD

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not a site for recreation only the locals come for recreational fishing.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge the overflow replenishes the Mandakolatur eri.

4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.

4.11 The bird enthusiast do not visit the wetland despite the diversity.

4.12 There are agriculture or plantation activities within the wetland on a large scale.

4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.

4.14 The wetland supports a fishery although the commercial fishery is restricted.

4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is limited commercial fishing activity and some recreational fishery is undertaken by local children and adults during their free time.

5.2 Major portion of the water is utilized for irrigation.

5.3 Agriculture is undertaken around the wetland and within the wetland.

5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.

5.5 The water is not used for any domestic purposes.

5.6 The wetland is used for bathing by livestock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.

6.3 There is increase in agricultural activities around the wetland.

6.4 There are invasive plant species that is changing the habitat of the wetland.

6.5 The wetland does have any idol immersion and encroachment activities are observed to a very small extent.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages. The agriculture within the wetland has to be controlled or prohibited.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Pelasur Lake

Table 29.9: List of Plant species recorded along the Pelasur Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 3 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 4 | *Sida rhombifolia* | Cuban jute, Jelly leaf, | Kurundotti | Malvaceae | Native | |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 11 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 12 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 13 | *Trianthema portulacastrum* | Desert Horse Purslane | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 14 | *Glinus lotoides* | Lotus Sweetjuice, | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 15 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 16 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 17 | *Oldenlandia umbellata* | Chay Root, Indian madder | Chayam, Chayaver | Rubiaceae | Native | |
| 18 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 21 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 22 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 23 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 24 | *Andrographis echioides* | False waterwillow | Gopuram tangi | Acanthaceae | Native | NA |
| 25 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 26 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 27 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 28 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 29 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 30 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 31 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 32 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 33 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 34 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.10a: List of Insect species recorded along the Pelasur Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Crickets | *Teleogryllus mitratus* | Gryllidae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 29.10b: List of Butterfly species recorded along the Pelasur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 29.10c: List of Odonata species recorded along the Pelasur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 4 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 29.10d: List of Fish species recorded form the Pelasur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 5 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.10e: List of Reptile species recorded along the Pelasur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

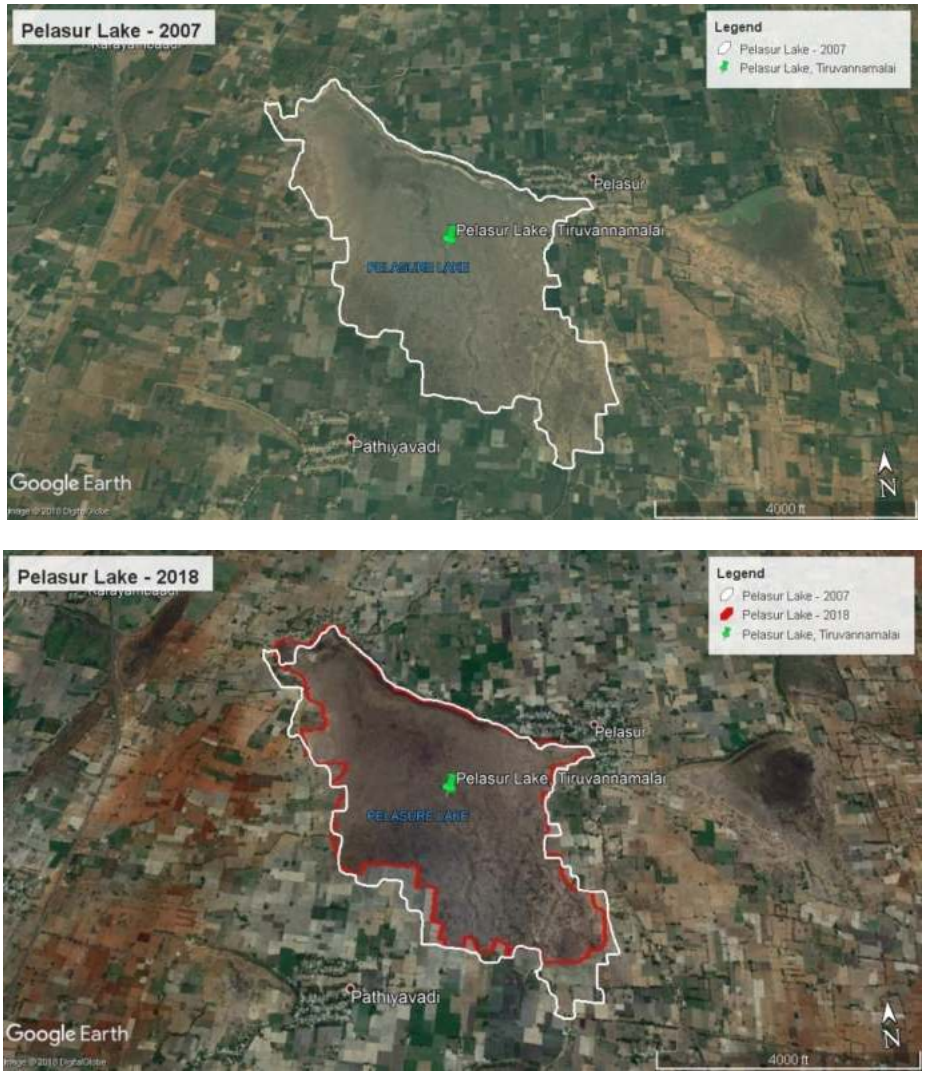
Table 29.10f: List of Bird species recorded along the Pelasur Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 5 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 6 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 7 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 8 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 9 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 10 | Common Snipe | *Gallinago gallinago* | Scolopacidae | Least Concern |
| 11 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 12 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 13 | Jacobin Cuckoo | *Clamator jacobinus* | Cuculidae | Least Concern |
| 14 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 15 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 16 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 17 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 18 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 19 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 20 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 21 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 22 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

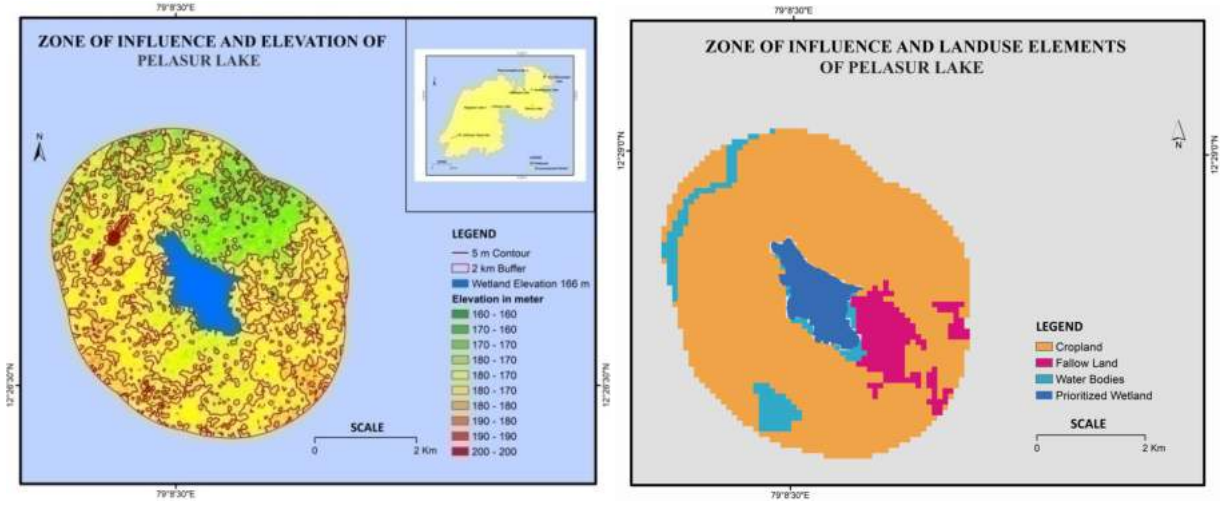
Table 29.10g: List of Mammal species recorded along the Pelasur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

Map 29.8: Comparative Google images for Pelasur Lake




Map 29.9: Zone of influence around the Pelasur Lake



**Ponnur Lake**

**Lake Survey Number:** 551

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Ponnur Lake (Plate 70).

1.2 Villages that surround the wetland include Ponnur, Elangadu, Nalleri, Soraputhur, Japthikarani.

1.3 & 1.4 The lake is based in Tiruvannamalai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 28'15.5" N; 12° 28'13.3" N; 12° 28'13.1" N; and Longitude: 079° 32'00.2" E; 079° 31'53.0" E; 079° 31'50.6" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Tiruvannamalai division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 113 hectares (Map 29.10).

2.2 The Wetland type - the wetlands belong to the Natural (inland) category in the sub category Seasonal Intermittant lakes.

2.3 Based on the secondary information the average depth is 1.5 meters for the wetland.

2.4 The elevation of the wetland is 86 to 96 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area.
b) The water in the wetland is intermitent nature, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields and the Einthukanu River system.
d) The pH of the water was observed to be alkaline and recorded between 7.4 to 9.5.
e) The lake has fresh water with the salinity recorded at 0.102 ppt at the time of sampling.
f) The wetland was observed to be Mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of February in Tiruvannamalai district was 0.0 mm.
b) The atmospheric temperature varied between 30.6 and 32.0 °C and the humidity was form 51 to 61%.

2.7 The area of zone of influence is 2237.94 hectares with a fixed buffer area of 2 kms around the wetland (Map 29.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 40%; | Grasslands/Scrublands 10%; |
| Agriculture 50 %; | Settlements (Rural) 0%; |
| Settlements (Urban) 0%; | Industries 0%. |

2.9. The comparison of the wetland for the years 2014 and 2017 is given in Map 29.10& 29.11.

**Section III- Biodiversity**

3.1 List of Plant species: 44 species of plants were recorded around the wetland during our visit (Table 29.11).

3.2 List of animal species: 46 animal species were recorded during the survey (Table 29.12a-h).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 29.12a-h).

3.4 Major Plant invasive alien species and extent of invasion: 10 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion - no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The villagers have dug out wells and borewells that they use for their daily consumption. The local panchayat also provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 There are farmlands where agriculture is undertaken around the wetland.
4.3 Fishery is undertaken only as a recreation activity by few locals and not as a livelihood. The fishes are mostly the local species; some individuals capture the fingerlings for ornamental aquaculture practice.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.7 It is a major source of ground water recharge.
4.8 There is significant runoff form the surrounding area.
4.10 The wetland has two temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 There is agriculture and plantation activities within the wetland. There are high tension electric wires that pass throught the wetland.
4.12 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.13 The wetland supports local fish species and there is no commercial fishery.
4.14 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken only as a recreation and self consumption.
5.2 There is agriculture undertaken within the wetland.
5.3 The agriculture within and around the wetland is the main practice for the villagers around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture or fishery purpose.
5.6 The wetland is used for bathing by livestock, recreational fishing.
5.7 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.
6.2 Increasing agriculture within the wetland and siltation during the monsoon season is one of the major threats to the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form increasing agriculture within the wetland changing the land use.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Encroachment and solidwaste dumping and increase in agriculture activities around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Ponnur Lake

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, Pp. 532.

Table 29.11: List of Plant species recorded along the Ponnur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Annona muricata* | Prickly Custard Apple | Mullu Seetha | Annonaceae | Native | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 4 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 7 | *Muntingia calabura* | Jamaica Cherry | Thenpazham | Muntingiaceae | Exotic | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 10 | *Crotalaria pallida* | Smooth Rattlepod | --- | Fabaceae | Native | NA |
| 11 | *Indigofera colutea* | Sticky Indigo | | Fabaceae | Native | NA |
| 12 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 13 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 14 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 15 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 16 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 17 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 18 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 21 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 22 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 23 | *Evolvulus alsinoides* | Dwarf morning glory,Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 24 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 25 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 26 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 27 | *Orthosiphon pallidus* | Pale Java Tea | | Lamiaceae | Native | |
| 28 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 29 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 30 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 31 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 32 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 33 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 34 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 35 | *Ficus ulmifolia* | Hairy fig, Devil fig | Peyatti | Moraceae | Native | VU |
| 36 | *Flacourtia indica* | Governor's plum, Flacourtia, | Cottai-k-kala | Salicaceae | Native | NA |
| 37 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 38 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 39 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 40 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 41 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 42 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |
| 43 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, | Poaceae | Native | NA |
| 44 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.12a: List of Insects recorded along the Ponnur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 29.12b: List of Butterflies recorded along the Ponnur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 29.12c: List of Dragonflies recorded along the Ponnur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 3 | Milky Dartlet | *Agriocnemis lacteola* | Coenagrionidae | Uncommon |
| 4 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 5 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 8 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 9 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 29.12d: List of Arachnida recorded along the Ponnur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 29.12e: List of Fishes recorded form the Ponnur Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 10 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 11 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 12 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 13 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.12f: List of Amphibians recorded along the Ponnur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Indian Bull Forg | *Hoplobatrachus tigerinus* | Dicroglossidae | Least Concern |
| 2 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |
| 3 | Indian Pond Forg | *Euphlyctis hexadactylus* | Dicroglossidae | Least Concern |

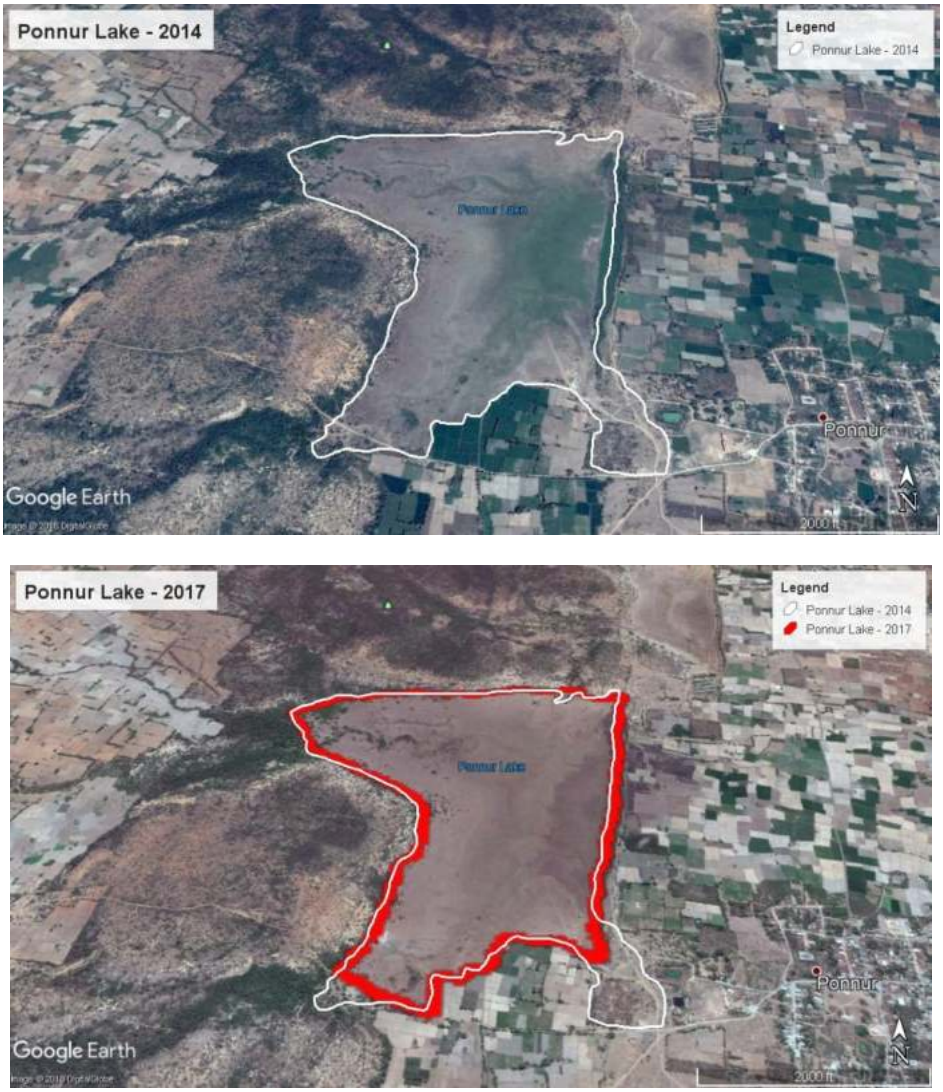
Table 29.12g: List of Reptiles recorded along the Ponnur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

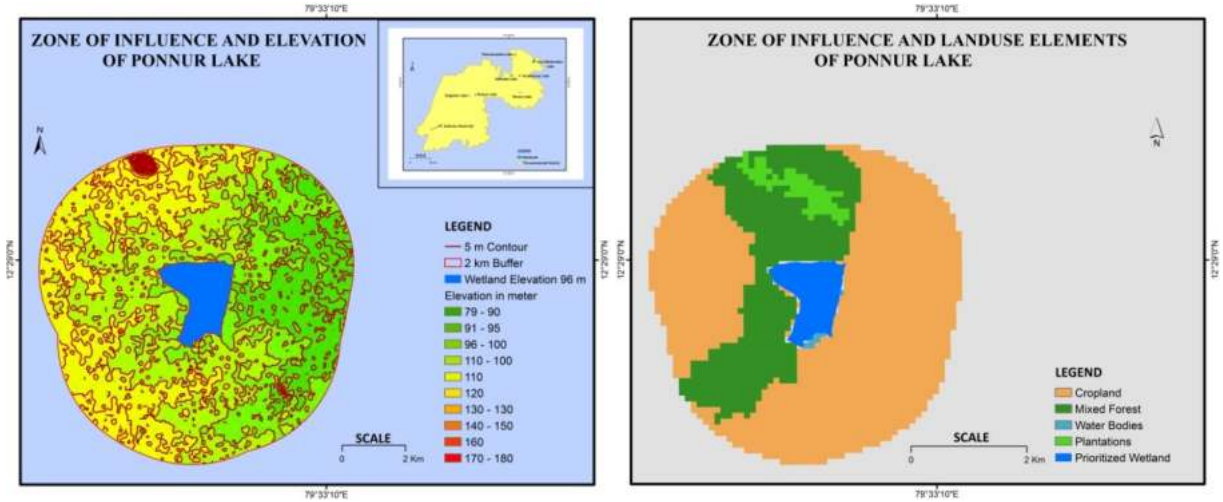
Table 29.12h: List of Birds recorded along the Ponnur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Northern Shoveler | *Anas clypeata* | Anatidae | Least Concern |
| 2 | Northern Pintail | *Anas acuta* | Anatidae | Least Concern |
| 3 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 4 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 8 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 9 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 10 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 11 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 12 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 13 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 14 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 15 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 16 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 17 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 18 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 19 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 20 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 21 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 22 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

**Map 29.10: Comparative Google imagery for Ponnur Lake**




**Map 29.11: The zone of influence around the Ponnur lake.**



**Sathanur Reservior**

**Lake Survey Number:** Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Sathanur Reservior or Dam (Plate 70)

1.2 Villages that surround the wetland include Sathanur.

1.3 & 1.4 The lake is based in Tiruvannamalai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 10'40.4" N; 12° 10'36.9" N; 12° 10'46.4" N; and Longitude: 078° 50'37.2" E; 078° 15'24.4" E; 078° 15'44.6" E;

1.6 The wetland is Protected Area by the Tamil Nadu Forest department and the PWD.

1.7 The wetland comes under the jurisdiction of Tamil Nadu Forest department and the PWD. Tamil Nadu Tourism Department also operates tourism around the Dam area.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 633 hectares (Map 29.12).

2.2 The Wetland type - the wetland belongs to the Man-Made category in the sub category Dam/ Reservoir.

2.3 Based on the secondary information the average depth is 8 meters for the wetland.

2.4 The elevation of the wetland is 228 to 234 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is rainfall, the surrounding runoff form the catchment area and direct inflow form the Swarnamugi River, Kalangi River and Arani River.
b) The water in the wetland is mostly of Permanent nature.
c) The water form the wetland forms a main source for the irrigation, drinking in the surrounding area. The water also helps in replenishingthe groundwater. The water is also used for hydropower generation.
d) The pH of the water was observed to be alkaline and recorded up to 8.8
e) The lake has fresh water with the salinity recorded at 0.317 ppt at the time of sampling.
f) The wetland was observed to be closer to oligotrophic as the wetland was observed to have minimal floating, submergent and emergent vegetation.

2.6 Climatic setting

a) Rainfall for the month of February in Tiruvannamalai District was 0.0 mm.
b) The atmospheric temperature varied between 35.1 and 35.5 °C and the humidity was form 29 to 35%.

2.7 The area of zone of influenceis 7303.333 hectares with a fixed buffer area of 2 kms around the wetlandHowever, itis a reservoir and does not fulfil the criteria of wetland (Map 29.13).

2.8 The major land use around the wetland comprised of

| | | |
|---|---|---|
| Forest 90%; | Grasslands/scrublands 8%; | |
| Agriculture 0%; | Settlements (rural) 0%; | |
| Settlements (Urban) 0%; | Industrial 0%; | Others 2% |

2.9. The comparison of the wetland for the years 2013 and 2017 is given in Map 29.12 & 29.13.

**Section III- Biodiversity**

3.1 List of Plant species: 44 species of plants were recorded around the wetland during our visit ( Table 29.13).

3.2 List of animal species: 54 faunal species excluding one domestic species were recorded during the survey (List attached - Table 29.14a-g).

3.3 Species of Conservation importance: Four near Threatened species of fish were observed during the survey (Table 29.14a-g).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Prosopis juliflora* and *Ipomoea sp.*formed nearly 10 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for drinking purpose. The wetland is a major Dam that provides to the villages and towns in the district.
4.2 Agriculture is not undertaken around the wetland.
4.3 Fishery is a major livelihood along the wetland, which is a community right, there is villagers fishing society. PWD gives the annual contracts. There are also crocodiles within the wetlands also.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is a site for recreation and is not frequented by locals as a picnic spot.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 The wetland acts as a sink for sediments.
4.10 The wetland has temples and other religious institutions along its bank.
4.11 The bird enthusiast do visit the wetland for the diversity.
4.12 There are no agriculture activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.14 The wetland supports a fishery that supports the livelihood of the local fisher community.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity undertaken traditionally. The impact on the ecological health is not assessed.
5.2 The water is not utilized for irrigation.
5.3 Agriculture is not undertaken around or within the wetland.
5.4 Grazing by the cattle was observed.
5.5 The water at the source is not used for any domestic purposes.
5.6 The wetland is used for bathing by live stock is undertaken, fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

**Section VII Notification Category**

The wetland is protected by the Forest department and the PWD as well as it is the wetland of National Importance and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The encroachments into the forest land should be controlled.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Tourism needs to be regulated.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Sathanur Reservior

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

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Table 29.13: List of Plant species recorded along the Sathanur Reservoir

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Ceiba pentandra* | Kapok, Ceiba, White Silk-Cotton Tree | | Malvaceae | Naturalized | LC |
| 3 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 9 | *Bauhinia purpurea* | Purple orchid tree | Nilattiruvatti | Fabaceae | Native | LC |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 12 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 13 | *Senna italica* | Royal senna, italian senna or senegal senna | | Caesalpiniaceae | Native | NA |
| 14 | *Terminalia catappa* | Indian Almond | Nattuvadumai, Vadumai | Combretaceae | Native | NA |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 16 | *Carica papaya* | Papaya Tree | Papali maram | Caricaceae | Native | DD |
| 17 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 18 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 19 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 20 | *Spermacoce ocymoides* | Purple leaved button | | Rubiaceae | Native | LC |
| 21 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 22 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 23 | *Evolvulus alsinoides* | Dwarf morning glory,Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 24 | *Ipomoea obscura* | Obscure Morning Glory | Chirutali, Kuruguttali, Sirudali | Convolvulaceae | Invasive | NA |
| 25 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 26 | *Pedalium murex* | Large caltrops | Yanai nerunji, Perunerunji | Pedaliaceae | Native | NA |
| 27 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 28 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 29 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 30 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 31 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 32 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 33 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Panna ipoo | Amaranthaceae | Native | NA |
| 34 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 35 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 36 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 37 | *Euphorbia heterophylla* | Wild Poinsettia | | Euphorbiaceae | Naturalized | NA |
| 38 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 39 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 40 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 41 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 42 | *Fimbristylis dichotoma* | | | Cyperaceae | Native | LC |
| 43 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 44 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.14a: List of Insects recorded along the Sathanur Reservoir

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 2 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 5 | Orange Spider Wasp | *Cryptocheilus bicolor* | Pompilidae |
| 6 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 29.14b: List of Butterflies recorded along the Sathanur Reservoir

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Rounded Pierrot | *Tarucus nara* | Polyommatinae | Common |
| 5 | Common Pierrot | *Castalius rosimon* | Polyommatinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 29.14c: List of Dragonflies recorded along the Sathanur Reservoir

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 29.14d: List of Fish recorded along the Sathanur Reservoir

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 10 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 12 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 13 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |
| 14 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.14e: List of Reptiles recorded along the Sathanur Reservoir

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

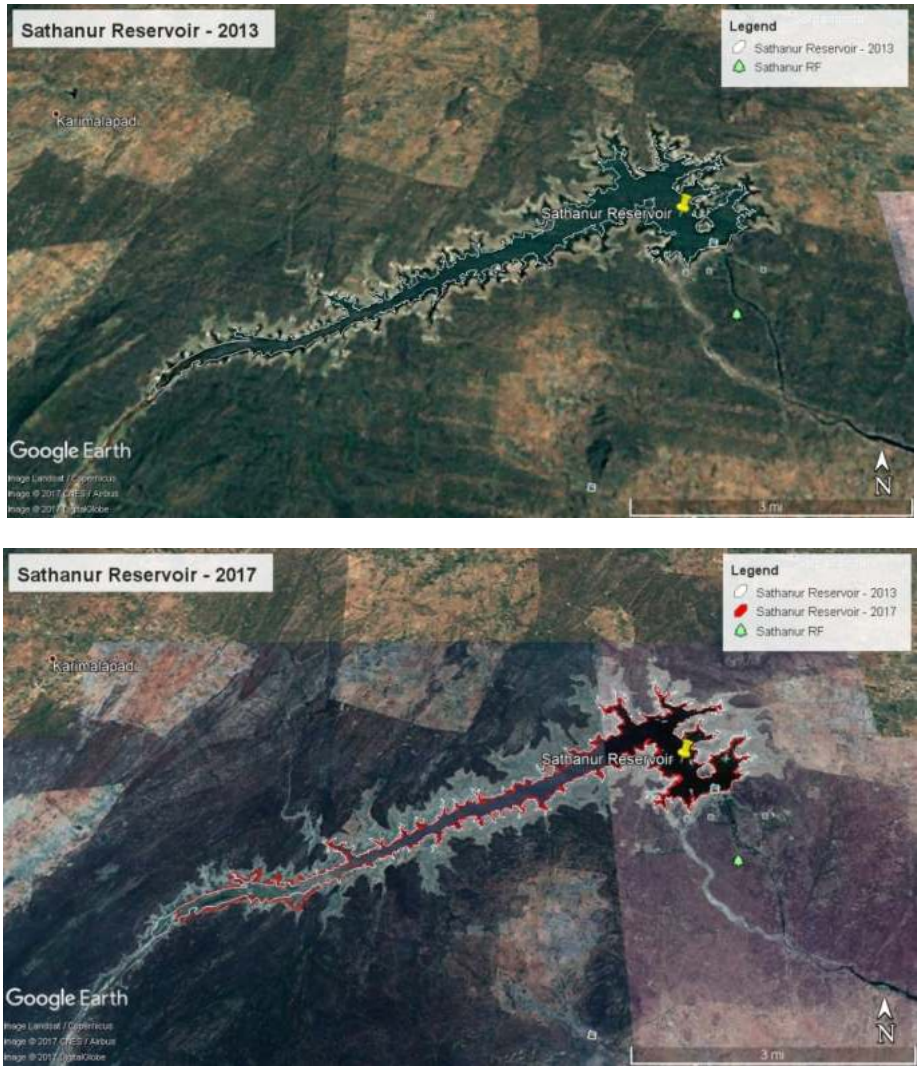
Table 29.14f: List of Birds recorded along the Sathanur Reservoir

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 8 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 9 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 10 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 11 | Little Swift | *Apus affinis* | Apodidae | Least Concern |
| 12 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 13 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 14 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 15 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 16 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 17 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 18 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

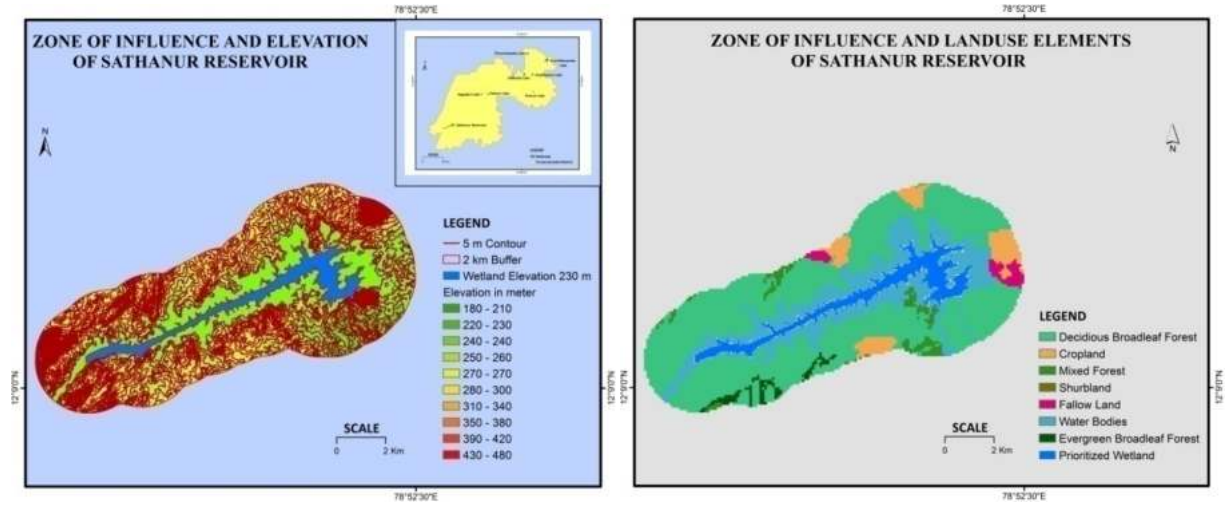
Table 29.14g: List of Mammals recorded along the Sathanur Reservoir

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Bonnet Macaque | *Macaca radiata* | Cercopithecidae | Least Concern |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 29.12: Comparative Google imagery for Sathanur Reservoir**




**Map 29.13: The zone of influence around the Sathanur reservoir.**



**Thennampattu Lake**

**Lake Survey Number**: not provided

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Thennampattu lake (Plate 71).

1.2 Villages that surround the wetland include Thennampattu, Nayanthangal, Mottur, Natteri, Ranthan and Thiruvenkadathan kudisai.

1.3 & 1.4 The lake is based in Tiruvannamalai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 47'51.0" N; 12° 47'55.5" N; 12° 48'02.5" N and Longitude: 079° 29'32.5" E; 079° 29'31.5" E; 079° 29'31.5" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tiruvannamalai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 298 hectares (Map 29.14).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent lake.

2.3 Based on the secondary information the average depth is 3 meters for the wetland.

2.4 The elevation of the wetland is 124 to 126 meters (asl).

2.5 Water regime

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and form Pallar River system.
b) The water in the wetland is mostly of intermittent in nature.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater and again joins the Pallar River.
d) The pH of the water was observed to be alkaline and recorded up to 9 to 9.7.
e) The lake has fresh water with the salinity recorded at 0.353 ppt at the time of sampling.
f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have floating, submergent and emergent vegetation. The wetland does not receive domestic sewage form the surrounding villages.

2.6 Climatic setting

a) Rainfall for the month of February in Tiruvannamalai was 0.0 mm.
b) The atmospheric temperature varied between 34.6 and 36.1 °C and the humidity was form 53 to 54%.

2.7 The area of zone of influence is 3064.91 hectares with a fixed buffer area of 2 kms around the wetland (Map 29.15).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0 %; | Grasslands and scrublands 10%; |
| Agriculture 90%; | Settlements (rural) 0%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2006 and 2017 is given in Map 29.14& 29.15).

**Section III- Biodiversity**

3.1 List of Plant species: 63 species of plants were recorded around the wetland during our visit ( Table 29.15).

3.2 List of animal species: 75 faunal species excluding 2 domestic species were recorded during the survey (List attached - Table 29.16a-h).

3.3 Species of Conservation importance: One threatened species of bird and two fish species were observed during the survey (Table 29.16a-h).
3.4 Major Plant invasive alien species and extent of invasion: 12 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The Local Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 Agriculture is undertaken around the wetland and major portion of the lake water is used for irrigation.
4.3 Fishery is a recreational option in the wetland for many and fishing as a livelihood is undertaken on a minor scale. Commercial fishing is undertaken only seasonally on contract form the PWD.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not a site for recreation only the locals come for recreational fishing.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge the overflow forms the Pallar River.
4.9 The wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.10 The wetland has temples along its bank and major cultural and religious activities are performed in the wetland.
4.11 The bird enthusiast do not visit the wetland despite the diversity.
4.12 There are no agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.14 The wetland supports a fishery although the commercial fishery is restricted.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is limited commercial fishing activity and some recreational fishery is undertaken by local children and adults during their free time.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland and within the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is not used for any domestic purposes.
5.6 The wetland is used for bathing by live stock is undertaken for fishing as well as for some recreation.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland does not have any idol immersion and encroachment activities are observed to a very small extent. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some grazing activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding wetlands. The cattle also use the wetland for grazing.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Thenampattu Lake

Kumarasamy Sampath (2015) Knowledge and Opinion of Farming Community about Irrigation Tanks - A Study form Tiruvannamalai District of Tamil Nadu State, India, Journal of Water Sustainability, Volume 5, Issue 1, March 2015, 21-30.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, Pp. 532.

Table 29.15: List of Plant species recorded along the Thennampattu Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 3 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 4 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 5 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 6 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattu kasturi | Malvaceae | Native | NA |
| 7 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 8 | *Corchorus aestuans* | East Indian Mallow, Jute | | Malvaceae | Native | |
| 9 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 10 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 11 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 12 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 13 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 14 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 15 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 16 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 17 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 18 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 19 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 20 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 21 | *Corallocarpus epigaeus* | Red fruit creeper | | Cucurbitaceae | Native | NA |
| 22 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 23 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 24 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 25 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 26 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 27 | *Xanthium strumarium* | Common Cocklebur | Marulumattai | Asteraceae | Native | NA |
| 28 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 29 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 31 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 32 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 33 | *Trichodesma indicum* | Indian Borage | Kallutaitumapi | Boraginaceae | Native | NA |
| 34 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 35 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 36 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 37 | *Martynia annua* | Devil's Claws | Thaelkodukkudai | Martyniaceae | Native | NA |
| 38 | *Asystasia gangetica* | Ganges Primrose | Mitikirai | Acanthaceae | Native | NA |
| 39 | *Barleria acuminata* | Long-flower Barleria | Vellai Kurinji | Acanthaceae | Native | NA |
| 40 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 41 | *Ruellia patula* | Spreading Ruellia | Grandhi nayakam | Acanthaceae | Native | NA |
| 42 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 43 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 44 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 45 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai, Mukkuttikkodi | Nyctaginaceae | Native | NA |
| 46 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 47 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 48 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 49 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 50 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 51 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 52 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 53 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 54 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 55 | *Ficus drupacea* | Mysore Fig, Brown Wolly Fig | Sonnaiala, Kalala | Moraceae | Native | NA |
| 56 | *Commelina benghalensis* | Bengal Dayflower | Adutinnathalai | Commelinaceae | Native | LC |
| 57 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 58 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 59 | *Apluda mutica* | Mauritian Grass | | Poaceae | Native | NA |
| 60 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 61 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 62 | *Eragrostis amabilis* | Japanese Lovegrass | | Poaceae | Native | NA |
| 63 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.16a: List of Insects recorded along the Thennampattu Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 4 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 5 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 29.16b: List of Butterflies recorded along the Thennamapattu Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | African Marbled Skipper | *Gomalia elma* | Pyrginae | Uncommon |
| 2 | Continental Swift | *Parnara ganga* | Hesperiinae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 5 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 8 | Common Wanderer | *Pareronia hippia* | Pierinae | Common |
| 9 | Common Gull | *Cepora nerissa* | Pierinae | Common |

| | | | | |
|---|---|---|---|---|
| 10 | Psyche | *Leptosia nina* | Pierinae | Common |
| 11 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 12 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 13 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 14 | Double-Branded Crow | *Euploea sylvester coreta* | Danainae | Common |
| 15 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 16 | Common Sailer | *Neptis hylas* | Limenitinae | Common |
| 17 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 18 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 29.16c: List of Dragonflies recorded along the Thennampattu Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 7 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 8 | Coral-Tailed Cloud Wing | *Tholymis tillarga* | Libellulidae | Common |
| 9 | Brown Dusk Hawk | *Zyxomma petiolatum* | Libellulidae | Common |

Table 29.16d: List of Arachnida recorded along the Thennampattu Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 29.16e: List of Fishes recorded along the Thennampattu Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 11 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.16f: List of Reptiles recorded along the Thennampattu Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 29.16g: List of Birds recorded along the Thennampattu Lake

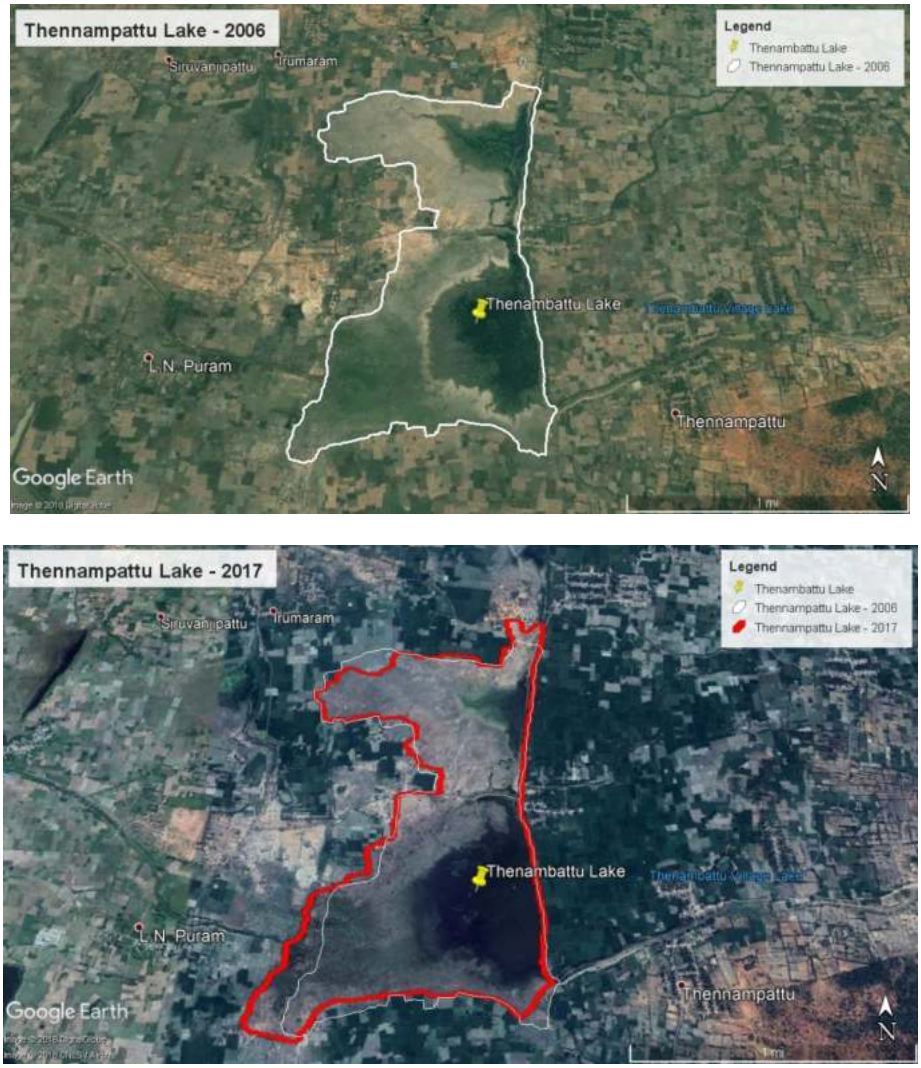
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 5 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 6 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 9 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 10 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 11 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 12 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 13 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 14 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 15 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 16 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 17 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 18 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 19 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 20 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 21 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 22 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 23 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

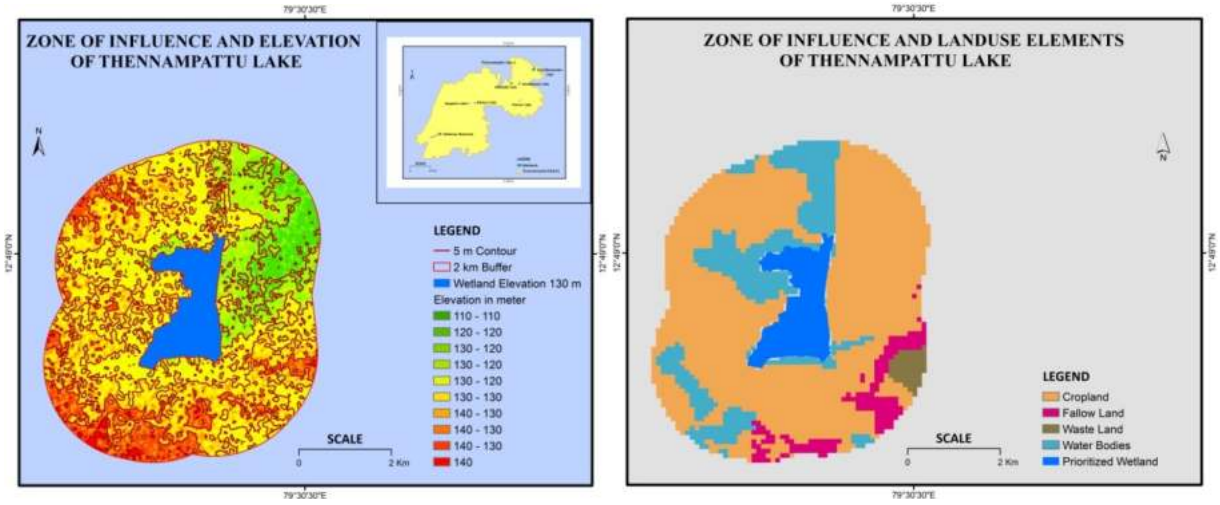
Table 29.16h: List of Mammals recorded along the Thennampattu Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 29.14: Comparative Google imagery for Thennampattu Lake**




**Map 29.15: The zone of influence around the Thennampattu lake.**



**Vakkadai Lake**

**Lake Survey Number**: not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Vakkadai Lake also called as Vazhaikudai lake, Kazhainipakkam lake (Plate 71).

1.2 Villages that surround the wetland include Vazhaikudai, Kazhainipakkam, Malikaipattu, Agatheripattu, Korukai.

1.3 & 1.4 The lake is based in Tiruvannamalai District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 37'34.1" N; 12° 37'30.1" N; 12° 37'36.5" N; 12° 37'41.8" N; 12° 37'49.3" N; 12° 37'53.4" N; and Longitude: 079° 28'18.5" E; 079° 28'01.6" E; 079° 27'48.1" E; 079° 27'45.6" E; 079° 27'45.9" E 079° 27'45.5" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tiruvannamalai Region.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 309 hectares (Map 29.16).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category in the sub category Tank of seasonal intermittent nature.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 101 to 119 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and direct inflow form the Kuppanathan River canal.
b) The water in the wetland is mostly of seasonal intermittent nature.
c) The water form the wetlands forms a main source for the agriculture lands in the surrounding area. The water also helps in replenishingthe groundwater overflow feeds to Kollathur lake, Sengadu lake, Kovillur lake and Naval Lake.
d) The wetland is oligotrophic and has a vast expanse.
e) The lake has fresh water with the salinity recorded at 0.138 ppt at the time of sampling.
f) The wetland was observed to be Oligotrophic as the wetland was observed to be covered with minimal floating, submergent and emergent vegetation. The wetland does not receive domestic sewage form the surrounding villages.

g) The locals have a unique way of using the wetland water sustainably by harvesting the fish in agriculture fields and releasing the water back into the wetland.

2.6 Climatic setting

a) Rainfall for the month of February in Tiruvannamalai was 0.0 mm.
b) The atmospheric temperature varied between 27 and 27.2 °C and the humidity was form 56 to 68%

2.7 The area of zone of influence is 3085.92 hectares with a fixed buffer area of 2 kms around the wetland (Map 29.17).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grass Land / Shrubland 5%; |
| Agriculture 90%, | Settlements (rural) 5%; |
| Settlements (Urban) 0%; | Industrial 0%. |

2.9. The comparison of the wetland for the years 2006 and 2017 is given in Map 29.16 & 29.17.

**Section III- Biodiversity**

3.1 List of Plant species: 37 species of plants were recorded around the wetland during our visit ( Table 29.17).
3.2 List of animal species: 96 faunal species including three domestic species were recorded during the survey (Table 29.18a-i).
3.3 Species of Conservation importance: All the species observed during the survey were mostly common except for three near threatened fish species (Table 29.18a-i).
3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed almost 90 % of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose. The municipal corporation provides drinking water. The locals use water form the borewell for irrigation and drinking.
4.2 Agriculture is undertaken around the wetland and wetland and ground water is used for irrigation.
4.3 Fishery is undertaken in the wetland.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.7 It is a major source of ground water recharge.
4.8 The wetland acts as a sink for sediments.
4.9 The wetland has a few temples along its bank and a few cultural and religious activities are performed in the wetland.
4.10 There are no agriculture or plantation activities within the wetland.
4.11 The wetland provides a suitable habitat for birds as we also recorded the local bird species during our survey.
4.12 The wetland supports a fishery, but the fish is cultured in the agriculture fields.
4.15 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 There is commercial fishing activity.
5.2 Major portion of the water is utilized for irrigation.
5.3 Agriculture is undertaken around the wetland.
5.4 Grazing by the cattle was observed. Bovines also use the wetland for drinking the water.
5.5 The water is used for domestic purposes.
5.6 The wetland is used for bathing by live stock is undertaken.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 There is very little pollution in the form of sewage, effluents and solidwaste dumping is seen but it is a low threat in its present condition.
6.3 There is increase in agricultural activities around the wetland.
6.4 There are invasive plant species that is changing the habitat of the wetland.
6.5 The wetland has solid waste dumping and encroachment activities. The wetland is used for washing of vehicles as well as for other human activities.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level. It is protected by the PWD.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland is mostly surrounded by agricultural activities with some developmental activities that should be regulated as they are in its initial stages.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The water form the wetland is majorly used for irrigation by the surrounding.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Vakkadai Lake


Kumarasamy Sampath (2015) Knowledge and Opinion of Farming Community about Irrigation Tanks - A Study form Tiruvannamalai District of Tamil Nadu State, India, *Journal of Water Sustainability*, Volume 5, Issue 1, March 2015, 21- 30.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Sampath K. (1993) Ecological evaluation of irrigation tanks in the Tiruvannamalai Sambuvarayar district of Tamil Nadu, India. In: Birds conservation strategies for the nineties and beyond Proceedings on Changing scenario and bird ecology and conservation, A. Verghese, S. Sridhar and A.K. Chakravarthy (Eds.) Published by Ornithological Society of India, Bangalore, pp. 274.

Sampath K. (1996) Ecological evaluation of irrigation tanks in northern Tamil Nadu, India. In: *Abstract of Pan-Asian Ornithological Congress and XII Birdlife Asia Conference*, India, Published by SACON, Coimbatore, pp.123.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, pp. 532.


Table 29.17: List of Plant species recorded along the Vakkadai Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 3 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Mangifera indica* | Mango | Ma | Anacardiaceae | Native | DD |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 12 | *Bidens pilosa* | Beggar Tick | Mukkuthi | Asteraceae | Exotic | NA |
| 13 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 16 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 17 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 18 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 19 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 20 | *Utricularia vulgaris* | Greater Bladderwort | | Lentibulariaceae | Introduced | LC |
| 21 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 22 | *Hygrophila balsamica* | Giant Aqua Rose | | Acanthaceae | Native | LC |
| 23 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 24 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 25 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 26 | *Alternanthera* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| | *paronychioides* | | | | | |
| 27 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 28 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 29 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 30 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 31 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 32 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 33 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai | Arecaceae | Native | NA |
| 34 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 35 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 36 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 37 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.18a: List of Insects recorded along the Vakkadai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Praying Mantis | *Mantidae sp.* | Mantodae |
| 4 | Water Strider | *Gerris sp.* | Gerridae |
| 5 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 6 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 7 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 8 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 9 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 10 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 11 | Polished Leaf-Border Ant | *Leptogenys chinensis* | Formicidae |
| 12 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 29.18b: List of Diplopoda recorded along the Vakkadai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Millipede | *Spinotarsus colosseus* | Odonotopgidae |
| 2 | Yellow Spotted Millipede | *Harpaphe haydeniana* | Xystodesmidae |

Table 29.18c: List of Butterflies recorded along the Vakkadai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 6 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 7 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 8 | Psyche | *Leptosia nina* | Pierinae | Common |
| 9 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 10 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 11 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 14 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 29.18d: List of Dragonflies recorded along the Vakkadai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 2 | Blue Dart | *Pseudagrion microcephalum* | Coenagrionidae | Common |
| 3 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |

| | | | | |
|---|---|---|---|---|
| 4 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 29.18e: List of Arachnida recorded along the Vakkadai Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |
| 3 | Long Jawed Orb-weaver | *Tetragnatha sp.* | Tetragnathidae |

Table 29.18f: List of Fishes recorded form the Vakkadai Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 9 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 10 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 12 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 13 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 14 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |
| 15 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |
| 16 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 17 | *Notopterus notopterus* | Featherback | Chotta vaalai meen | Notopteridae | LC |
| 18 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |
| 19 | *Sphyraena barracuda* | Great barracuda | Seelameen | Sphyraenidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 29.18g: List of Reptiles recorded along the Vakkadai Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 29.18h: List of Birds recorded along the Vakkadai Lake

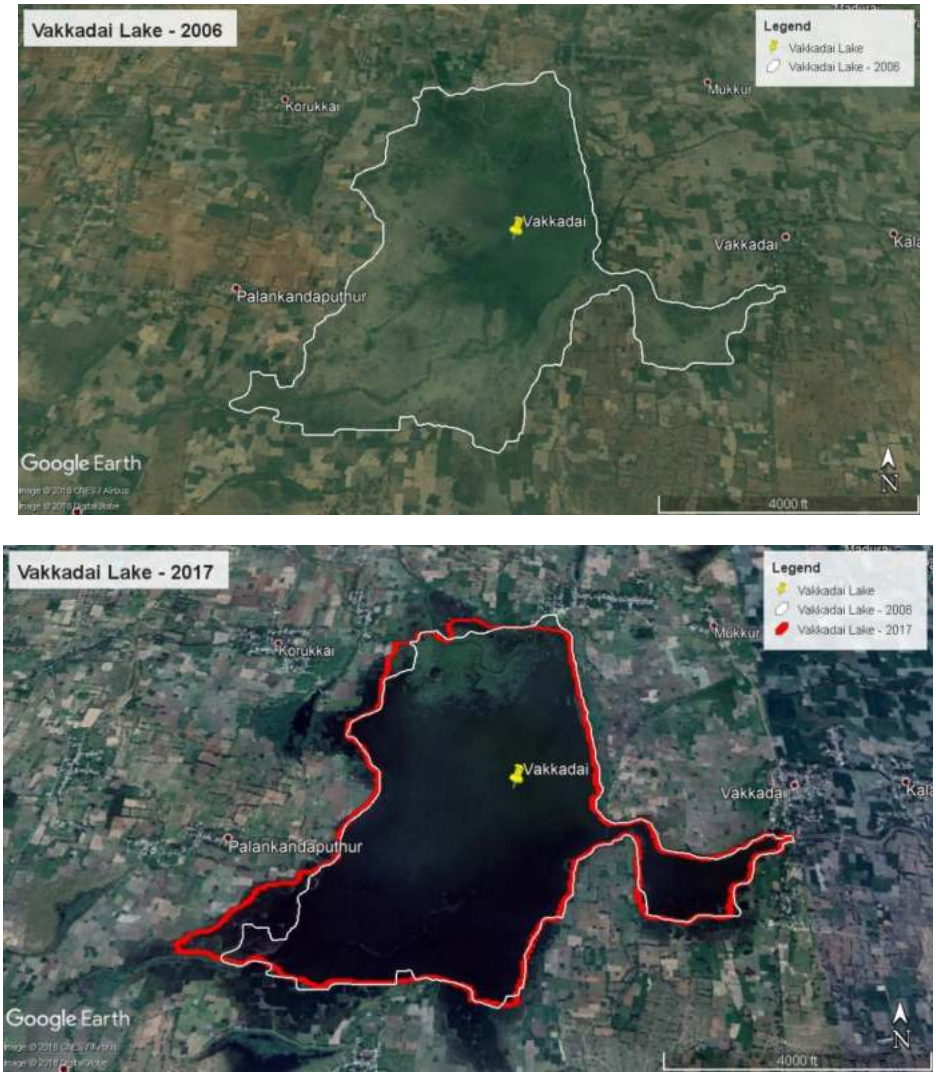
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 4 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 5 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 8 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 9 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 12 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 13 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 14 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 15 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 16 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 17 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 18 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 19 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 20 | Indian Golden Oriole | *Oriolus kundoo* | Oriolidae | Least Concern |
| 21 | Rufous Treepie | *Dendrocitta vagabunda* | Corvidae | Least Concern |
| 22 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 23 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 24 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 25 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 26 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 27 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 28 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 29 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 30 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 31 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 32 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 33 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 34 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

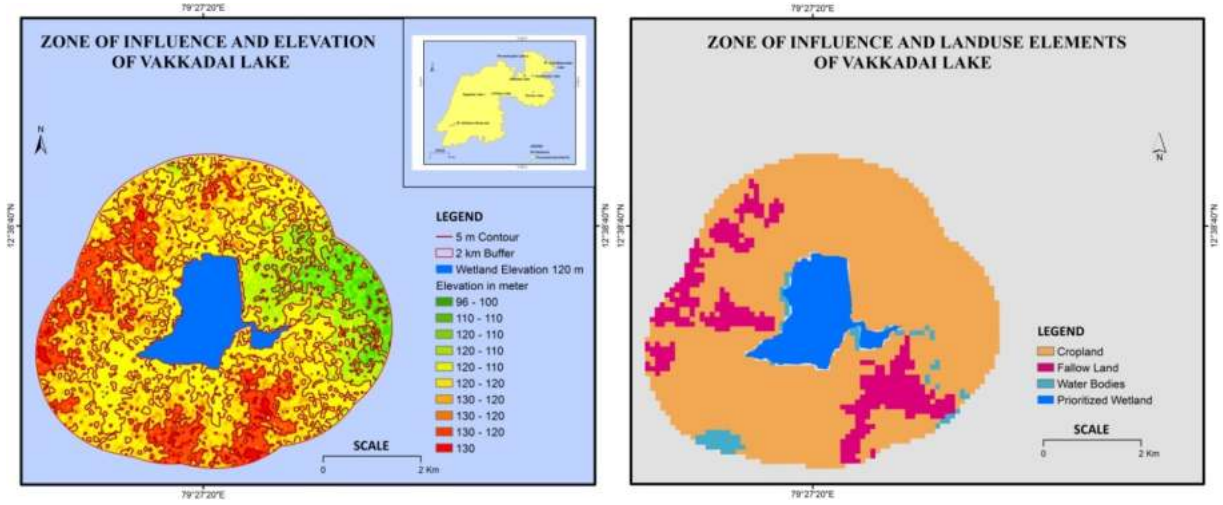
Table 29.18i: List of Mammals recorded along the Vakkadai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 29.16: Comparative Google imagery for Vakkadai Lake**




**Map 29.17: The zone of influence around the Vakkadai lake.**



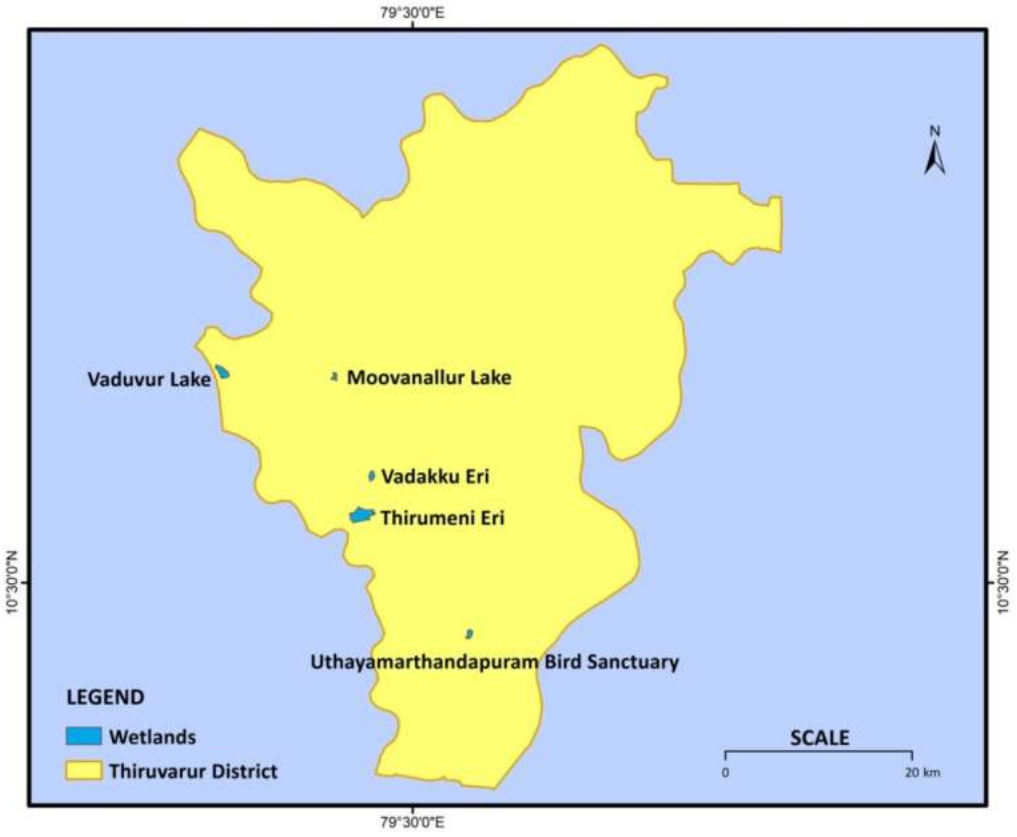
## 30. Tiruvarur District

### 1. Introduction

Tiruvarur is lying between Nagapattinam district on the east and Thanjavur district on the west, and is bounded by the Palk Strait on the south. The district headquarters is located at Tiruvarur town. Thiruvarur District is famous for its evergreen paddy fields. The mangrove forests in Muthuppettai, occupies an important place among the nature's beauty of this district, besides the sprawling paddy fields on both sides of Rivers, canals and roads. The Birds' sanctuary in Udhayamarthandapuram and Vaduvoor are wonderful places that attract tourists.

Total geographic area of Tiruvarur is 2097.09 km². Total area under wetland is 22591 ha, which includes 1026 small wetland (<2.25 ha). Major wetland types of the district are; Inter-tidal mudflats (6924 ha), Lagoons (4786 ha), River/Stream (5669 ha) and Tanks/ponds (901 ha).

SACON during 2004 had prioritized three wetlands form Tiruvarur district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these three wetlands to assess its present potential for conservation. (Map30.1). In addition, two more wetlands were selected on the basis of the decadal changes in the google imagery.




**Map 30.1: Wetlands of Tiruvarur district assessed for Prioritization**

### Observations

Of the fivewetlands selected in the district, Thirumeni eri is the largest while Moovanallur is the smallest of the wetlands. Around the three wetlands, we recorded 166 plant species both aquatic and terrestrial including 19 invasive species (Table 30.1). The faunal components totaled 136 species with the representation of 60 bird species including the wetland birds. The field study we observed Moovanallur and Vadakku eri to be dry with stable hydric

soil characteristics. The other three wetlands showed different trophic status with Thirumeni as Oligotrophic, Udayamarthandapuram as Mesotrophic while the Vadavur bird sanctuary was Eutrophic in status (Table 30.2). The water quality was comparatively better in Thirumeni than the other two wetlands. The soil is regularly hydrated annually and hence it forms a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Elandaikudam wetland. Mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Moovanallur Lake
2. Vadakku Eri
3. Thirumeni Eri
4. Vaduvur Lake, Udayamarthandapuram Bird Sanctuary

Table 30.1: The flora and fauna recorded form the wetlands of Thiruvarur District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Thirumeni Eri | 48(5) | 7 | 5 | 12 | 1 | 9 | 0 | 2 | 31 | 4 |
| 2 | Udayamarthandapuram Bird Sanctuary | 99(15) | 4 | 3 | 7 | 2 | 9 | 0 | 1 | 27 | 5 |
| 3 | Vaduvur Lake | 55(13) | 19 | 8 | 18 | 2 | 7 | 0 | 1 | 47 | 5 |
| 4 | Vadakku Eri | 43(9) | 1 | 3 | 4 | 0 | 7 | 1 | 1 | 11 | 4 |
| 5 | Moovanallur Lake | 31(3) | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 5 | 2 |
| | | 166 (19) | 20 | 9 | 22 | 2 | 14 | 1 | 2 | 60 | 6 |

Table 30.2: The water and soil quality assessed form the wetlands of Thiruvarur District

| District Name | Thiruvarur | | | | |
|---|---|---|---|---|---|
| Wetland Name | Vaduvur Lake | Vadakku Eri | Thirumeni Eri | Moovanallur Lake | Uthayamarthandapuram Bird Sanctuary |
| Wetland area (ha) | 111 | 46.3 | 284 | 33 | 46 |
| Buffer Area in Hectare (ha) | 2174.16 | 1843.25 | 2726.84 | 1798.09 | 1825.83 |
| Air Temperature °C | 34.7 | 31.7 | 32.8 | 29 | 27.5 |
| Water Temperature °C | 32.7 | | 31.5 | | 28.6 |
| Humidity % | 42 | 62 | 52 | 65 | 64 |
| Nutrients in Water | Eutrophic | not known | Oligotrophic | not known | Mesotrophic |
| Water pH | 8.8 | | 8.6 | | 9.5 |
| Water TDS ppm | 370 | | 197 | | 244 |
| Water Conductivity ppm | 1510 | | 436 | | 519 |
| Light Penetration cms | 98 | | 37 | | 25 |
| Water Salinity ppt | 0.317 | | 0.174 | | 0.245 |
| DO mg/L | 12.40 | | 7.11 | | 15.85 |
| PO4P mg/L | 0.198 | | 0.005 | | 0.010 |
| Water Na ppm | 55 | | 31.4 | | 39 |
| Water K ppm | 17 | | 4.9 | | 13.3 |
| Water Li ppm | 0.1 | | 0 | | 0.2 |
| Water Ca ppm | 118 | | 20.6 | | 31.5 |
| Soil Colour code | 10YR 6/4 | 7.5YR 5/4 | 10YR 6/6 | 7.5YR 5/4 | 10YR 7/3 |
| Soil Colour | Light Yellowish Brown | Brown | Brownish Yellow | Brown | Very Pale Brown |
| Soil pH | 8 | 7.34 | 7.61 | 7.9 | 7.82 |
| Soil TDS ppm | 524 | 1.28 | 149 | 197 | 189 |
| Soil Conductivity ppm | 736 | 1813 | 210 | 278 | 266 |
| Soil Salinity ppt | 0.359 | 0.922 | 0.102 | 0.134 | 0.128 |
| Soil Na ppm | 23.2 | 247.5 | 30.3 | 25.3 | 14 |
| Soil K ppm | 9.9 | 20.1 | 2.4 | 5.6 | 7.7 |
| Soil Li ppm | 0.2 | 0.3 | 0 | 0.1 | 0.1 |
| Soil Ca ppm | 56.8 | 85 | 10.4 | 16.6 | 17 |

**Moovanallur Lake**

**Lake Survey Number**: Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Mooanallur eri also known as Rajalikudi lake (Plate 72).

1.2 Villages that surround the wetland includeMooanallur, Kudikadu, vettikadu, Marapuram.

1.3 & 1.4 The lake is based in Mannargudi taluka in Thiruvalur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 42'08.7" N; 10° 42'02.3" N; 10° 41'53.2" N; and Longitude: 079° 25'33.7 E; 079° 25'35.1" E; 079° 25'37.2" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tamil Nadu.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 33 hectares (Map 30.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent wetland.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 26 to 32 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and Bhamani River a tributary of Cauvery. Theer is a channel Kattuvaikal channel also that goes along he wetland but the water is not released into the wetland.
b) The water in the wetland is mostly of intermittent in nature and last for about 4 months.
c) The water also helps in replenishingthe groundwater, feeds the smaller wetlands around and the agriculture lands.
d) The pH of the water was not recorded as the wetland was dry during our visit.
e) The lake has fresh water as per the discussions with the locals.
f) The wetland was observed to be closer to Unknown as the wetland was dry during our visit. moreover the wetland has high encroachment in the form of agriculture and other livelihood activities.

2.6 Climatic setting

a) Rainfall for the month of February in Thiruvaur was 2.7 mm.
b) The atmospheric temperature was 29°C and the humidity was 65 %.

2.7 The area of zone of influence is 1798.09 hectares with a fixed buffer area of 2 kms around the wetland (Map 30.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 0%; |
| Agriculture 90%; | Settlement (Rural) 10%; |
| Settlement (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2007 and 2018 is given in Map 30.2 & 30.3.

**Section III- Biodiversity**

3.1 List of Plant species: 30 species of plants were recorded around the wetland during our visit (Table 30.3).

3.2 List of animal species: 10 animal species including 2 domestic species were recorded during the survey (Table 30.4a-e).

3.3 Species of Conservation importance: No Threatened species were observed during the survey (Table 30.4a-e).

3.4 Major Plant invasive alien species and extent of invasion: Three invasive plants including *Prosopis juliflora* and *Ipomoea sp.*formed nearly 60 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around the wetland and the ground water is used for irrigation.
4.3 Commercial fishery is undertaken in the lake through permission form the village panchayat and the PWD, recreational fishery is also practiced.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.7 It is a major source of ground water recharge.
4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.9 The wetland has a few temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.
4.10 The site is only majorly used by the farmers only.
4.11 There is agriculture or plantation activities within the wetland.
4.12 The wetland provides a suitable habitat for birds as we also recorded the terrestrial bird species during our survey.
4.13 The wetland supports a diversity of local fishery.
4.14 There was no mining for sand or silt undertaken.
4.15 Duck farming and goatery is practiced within the wetland during the dry season.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken.
5.2 Agriculture is undertaken around the wetland.
5.3 Grazing by the cattle is undertaken.
5.4 There is withdrawal of water for agriculture.
5.5 The wetland is used for bathing by livestock.
5.6 Agriculture is undertaken within the wetland.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 The lack of water due to poor rains has formed a serious threat in its present condition.
6.3 There is no organized fishing activity.
6.4 Solid waste dumping and garbage burning is becoming a issue around the wetland.

**Section VII Notification Category**

The wetland is not protected or conserved under any laws and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form solid waste dumping although.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The wetland recives very little water that needs to be addressed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Moovanallur Lake

Table 30.3: List of plant species recorded along the Moovanallur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Capparis zeylanica* | Ceylon caper | Adondai, Konkani | Capparaceae | Native | NA |
| 2 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 5 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 6 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Mangifera indica* | Mango | Ma | Anacardiaceae | Native | DD |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 11 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 12 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 13 | *Carica papaya* | Papaya Tree | Papali maram | Caricaceae | Native | DD |
| 14 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 15 | *Catharanthus roseus* | Periwinkle, Vinca | | Apocynaceae | Introduced | NA |
| 16 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 17 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 18 | *Sesamum indicum* | Sesame | Citrrel, Ellu, Tilam | Pedaliaceae | Native | NA |
| 19 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, | Martyniaceae | Native | NA |
| 20 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 21 | *Celosia argentea* | Plumed cockscomb, | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 22 | *Chrozophora rottleri* | Rottler's Chrozophora | Purapirakkai | Euphorbiaceae | Native | NA |
| 23 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 24 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 25 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 26 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 27 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 28 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 29 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 30 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.4a: List of Insect species recorded along the Moovanallur Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 30.4b: List of Odonata species recorded along the Moovanallur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 30.4c: List of Reptile species recorded along the Moovanallur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 30.4d: List of Bird species recorded along the Moovanallur Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Indian Nightjar | *Caprimulgus asiaticus* | Caprimulgidae | Least Concern |
| 2 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 3 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 4 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 5 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

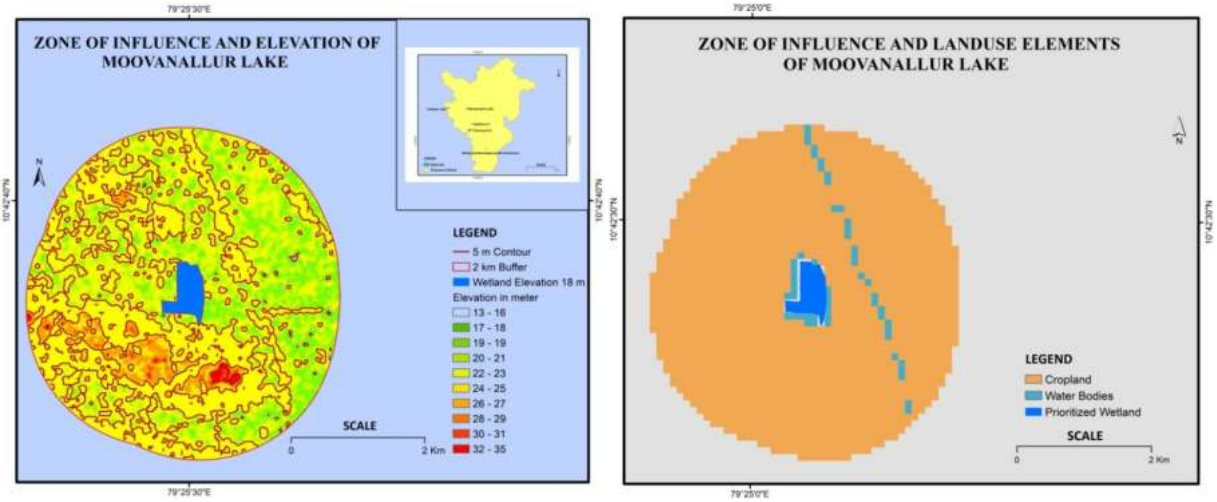
Table 30.4e: List of Mammal species recorded along the Moovanallur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |

**Map 30.2: Comparative google imagery for Moovanallur Lake**




**Map30.3: Zone of Influence around the Moovanallur Lake**



**Thirumeni Eri**
**Lake Survey Number**: 218

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Thirumeni eri (Plate 72).
1.2 Villages that surround the wetland include Thirumenakottai, Panchandary and Averikettai.
1.3 & 1.4 The lake is based in Thiruvarur District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 10° 33'45.7" N; 10° 33'28.7" N; 10° 33'33.0" N and Longitude: 079° 26'23.7 E; 079° 26'36.0" E; 079° 26'56.7" E.
1.6 The wetland is not a Protected Area.
1.7 The wetland comes under the jurisdiction of PWD Tamil Nadu.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 284 hectares (Map 30.4).
2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent wetland.
2.3 Based on the secondary information the average depth is 3.5 meters for the wetland.
2.4 The elevation of the wetland is 18 to 20 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area.
   b) The water in the wetland is mostly of intermittent in nature and last for about 6 months.
   c) The water also helps in the replenishing the groundwater, feeds the smaller wetlands around and the agriculture lands.
   d) The pH of the water was 8.6.
   e) The lake has fresh water with the salinity recorded at 0.174 ppt at the time of sampling.
   f) The wetland was observed to be closer to Oligotrophic as the wetland was observed to have some floating, submergent and emergent vegetation.
2.6 Climatic setting
   a) Rainfall for the month of February in Thiruvaur was 2.7 mm.
   b) The atmospheric temperature was 32.8°C and the humidity was 5 %
2.7 The area of zone of influence is 2726.84 hectares with a fixed buffer area of 2 kms around the wetland (Map 30.5).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 10%; |
| Agriculture 90%; | Settlement (Rural) 0%; |
| Settlement (Urban) 0%; | Industries 0%. |

2.9 The comparison of the wetland for the years 2010 and 2017 is given in Map 30.4 & 30.5.

**Section III- Biodiversity**

3.1 List of Plant species: 46 species of plants were recorded around the wetland during our visit (Table 30.5).
3.2 List of animal species: 71 animal species including 3 domestic species were recorded during the survey (Table 30.6a-h).
3.3 Species of Conservation importance: Two Threatened fish species were recorded during the survey (Table 30.6a-h).
3.4 Major Plant invasive alien species and extent of invasion: Five invasive plants including *Parthenium hysterophorus* and *Ipomoea sp.* formed nearly 40 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.
4.2 Agriculture is undertaken around the wetland and the ground water is used for irrigation.
4.3 Commercial fishery is not undertaken in the lake, recreational fishery is practiced.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.7 It is a major source of ground water recharge.
4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.
4.9 The site is only majorly used by the farmers only.
4.10 There is no agriculture or plantation activities within the wetland.
4.11 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.
4.12 The wetland supports a diversity of local fishery.
4.13 There is mining for sand or silt undertaken on a regular basis.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.
5.2 Agriculture is undertaken around the wetland.
5.3 Grazing by the cattle is undertaken.
5.4 There is withdrawal of water for agriculture.
5.5 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.
6.2 The lack of water due to poor rains has formed a serious threat in its present condition.
6.3 There is no organized fishing activity.
6.4 Solid waste dumping and garbage burning is becoming a issue around the wetland.

**Section VII Notification Category**

The wetland is not protected or conserved under any laws and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form solid waste dumping and encroachment.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The wetland recives very little water that needs to be addressed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available for Thirumeni Eri.

Table 30.5: List of Plant species recorded along the Thirumeni Eri

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 2 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 6 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 7 | *Ziziphus mauritiana* | Indian Plum | Elandhaimaram | Rhamnaceae | Native | NA |
| 8 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 9 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, | Fabaceae | Native | NA |
| 10 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 11 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 14 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 15 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 16 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 17 | *Acanthospermum hispidum* | Bristly Starbur, Goat's Head | | Asteraceae | Native | NA |
| 18 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 21 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 22 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 23 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 24 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 25 | *Solanum nigrum* | Black nightshade,Blackberry nightshade, | Manathakkali | Solanaceae | Native | NA |
| 26 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 27 | *Utricularia aurea* | Golden Bladderwort | | Lentibulariaceae | Native | LC |
| 28 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |
| 29 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 30 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 31 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 32 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 33 | *Celosia argentea* | Plumed cockscomb, silver cockscomb | makilikkeerai,Pannaipoo | Amaranthaceae | Native | NA |
| 34 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 35 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 36 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 37 | *Agave americana* | Agave, Century plant | | Asparagaceae | Introduced | |
| 38 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 39 | *Aponogeton natans* | Floating Lace Plant | Kotti, Kotti kizhangu | Aponogetonaceae | Native | LC |
| 40 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 41 | *Schoenoplectus subulatus* | Common Club-rush | | Cyperaceae | Native | NA |
| 42 | *Aristida adscensionis* | | | Poaceae | Native | NA |
| 43 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 44 | *Cynodon dactylon* | Bermuda grass, | | Poaceae | Invasive | NA |
| 45 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 46 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.6a: List of Insects species recorded along the Thirumeni Eri

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Weaver Ant | *Oecophylla smaragdina* | Formicidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 7 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 30.6b: List of Butterflies species recorded along the Thirumeni Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 4 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 5 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 6 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 7 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 8 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 9 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 10 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 11 | Common Crow | *Euploea core* | Danainae | Common |
| 12 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 30.6c: List of Odonata species recorded along the Thirumeni Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 30.6d: List of Arachnida species recorded along the Thirumeni Eri

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 30.6e: List of Fish species recorded form the Thirumeni Eri

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 9 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.6f: List of Reptiles species recorded along the Thirumeni Eri

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

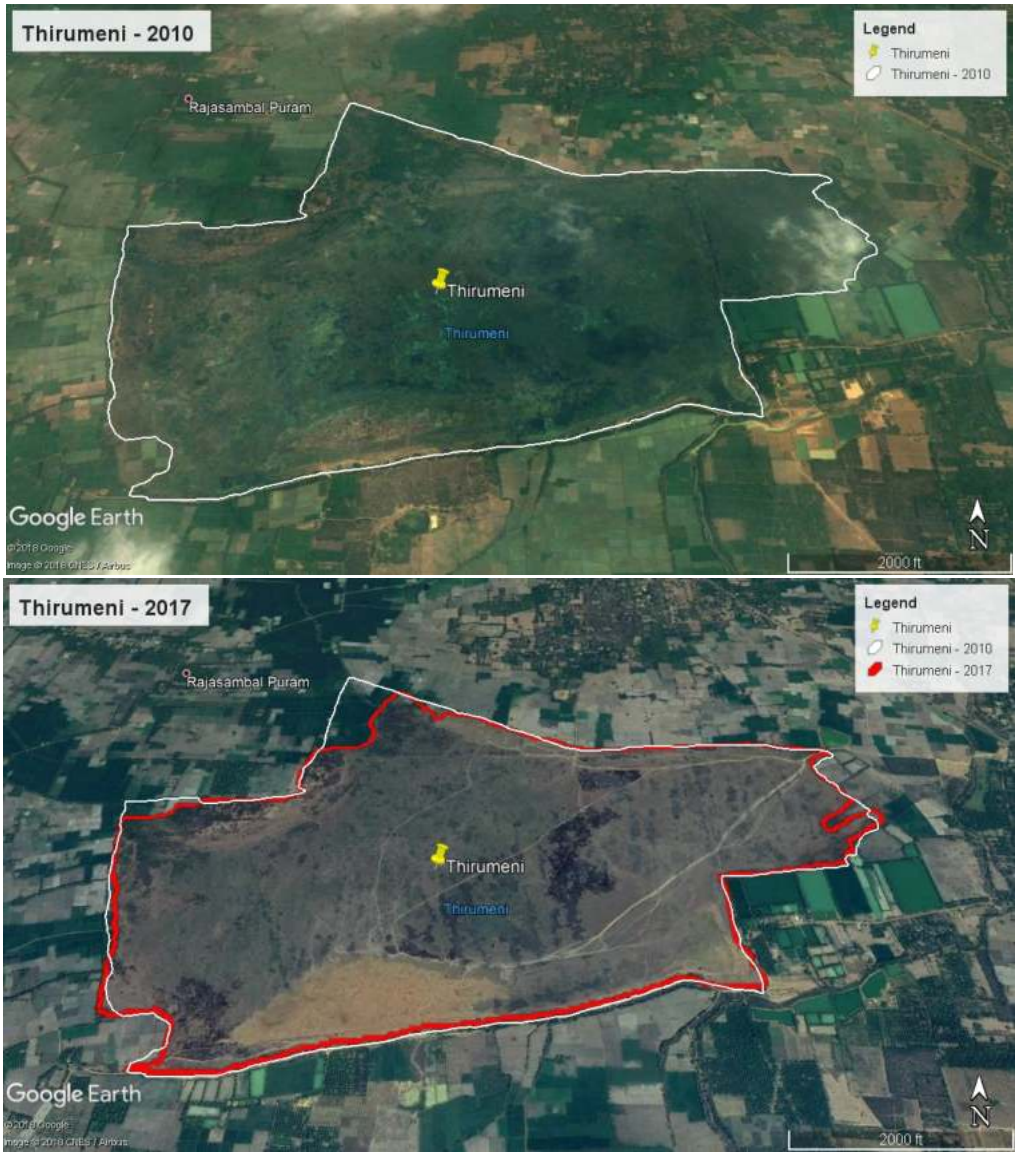
Table 30.6g: List of Birds species recorded along the Thirumeni Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 6 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 7 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 10 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 11 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 12 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 13 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 14 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 15 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 16 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 17 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 18 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 19 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 20 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 21 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 22 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 23 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 24 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 25 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 26 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 27 | Rosy Starling | *Pastor roseus* | Sturnidae | Least Concern |
| 28 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |
| 29 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 30 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |
| 31 | Black-headed Munia | *Lonchura malacca* | Estrildidae | Least Concern |

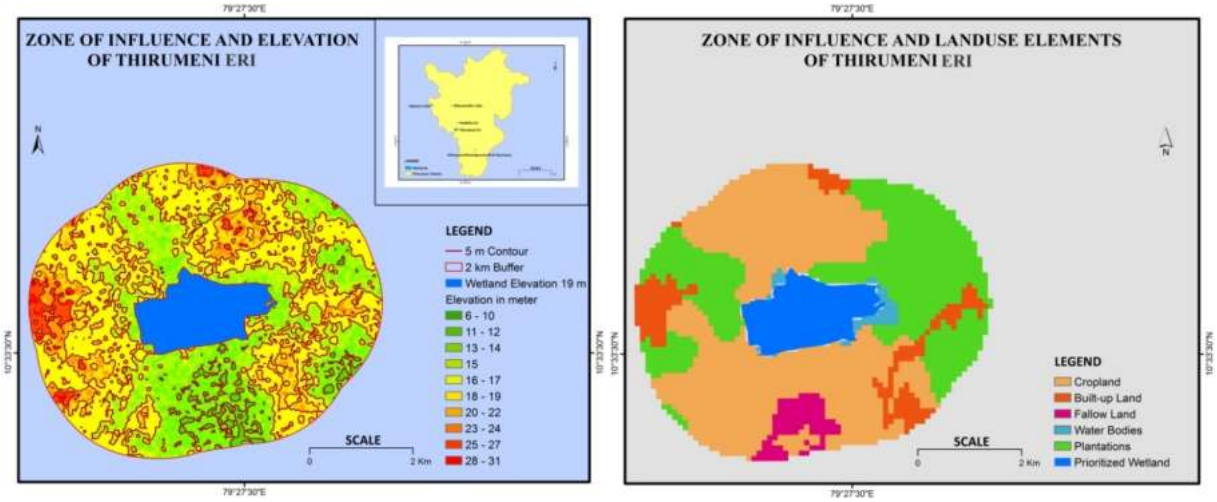
Table 30.6h: List of Mammals species recorded along the Thirumeni Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

Map 30.4: Comparative google imagery for Thirumeni Eri




Map30.5: Zone of Influence around the Thirumeni Eri



**Udayamarthandapuram Bird Sanctuary**

Udayamarthandapuram Bird Sanctuary is a Protected Area located in Thiruvarur District in the Indian state of Tamil Nadu. It is declared as a Protected Area in December 1999. It is home to a variety of birds. The sanctuary is open to visitors throughout the year.

**Lake Survey Number**: Not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Udayamarthandapuram Bird Sanctuary (Plate 73).
1.2 Villages that surround the wetland include Udayamarthandapuram.
1.3 & 1.4 The lake is based in Thiruvarur District of Tamil Nadu state.
1.5 The geographic coordinates are Latitude: 10°26'57.1" N; 10°26'59.6" N; 10°26'59.7" N; 10°27'09.7" N; 10° 27'15.2" N and Longitude: 079°33'10.6 E; 079°33'15.7" E;079°33'09.8" E;079°33'10.0" E;079°33'13.1" E.
1.6 The wetland is a Protected Area.
1.7 The wetland comes under the jurisdiction of Tamil Nadu Forest Department.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 466 hectares (Map 30.6).
2.2 The Wetland type - the wetland belongs to the Manmade Tank category in the sub category seasonal intermittent wetland.
2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.
2.4 The elevation of the wetland is 8 to 12 meters (asl).
2.5 Water regimes
   a) The main source of water for the wetland is rainfall, groundwater, the surrounding runoff form the catchment area and the Mettur Dam.
   b) The water in the wetland is mostly of intermittent in nature and last for about 8 months.
   c) The water also helps in replenishingthe groundwater, feeds the smaller wetlands around and the agriculture lands.
   d) The pH of the water was 9.5.
   e) The lake has fresh water with the salinity recorded at 0.245 ppt at the time of sampling.
   f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation,
2.6 Climatic setting
   a) Rainfall for the month of February in Thiruvaur was 2.7 mm.
   b) The atmospheric temperature was 27.5°C and the humidity was 64 %
2.7 The area of zone of influence is 1825.83 hectares with a fixed buffer area of 2 kms around the wetland (Map 30.7).
2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 0%; |
| Agriculture 80%; | Settlement (Rural) 20%; |
| Settlement (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2011 and 2017 is given in Map 30.6 & 30.7.

**Section III- Biodiversity**

3.1 List of Plant species: 93 species of plants were recorded around the wetland during our visit (Table 30.7).
3.2 List of animal species: 59 animal species including 3 domestic species were recorded during the survey (Table 30.8a-h).
3.3 Species of Conservation importance: Two Threatened species of birds and fish were observed during the survey (Table 30.8a-h).

3.4 Major Plant invasive alien species and extent of invasion: 15 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornia crassipes* formed nearly 60 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion – Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around the wetland and the ground water is used for irrigation.

4.3 Commercial fishery is not undertaken in the lake, recreational fishery is also not practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.7 It is a major source of ground water recharge.

4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.9 The wetland has a few temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.

4.10 The site is only majorly used by the birds and local farmers only.

4.11 There are no agriculture or plantation activities within the wetland.

4.12 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.13 The wetland supports a diversity of local fishery.

4.14 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.

5.2 Agriculture is undertaken around the wetland.

5.3 Grazing by the cattle is undertaken out side the wetland and sanctuary.

5.4 There is no withdrawal of water for agriculture.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The lack of water due to poor rains has formed a serious threat in its present condition.

6.3 There is no organized fishing activity.

**Section VII Notification Category**

The wetland is Protected Area and conserved by the forest department and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form encroachment to some extent.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The wetland recives very little water that needs to be addressed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Udayamarthandapuram Bird Sanctuary

Table 30.7: List of plant species recorded along the Udayamarthandapuram Bird Sanctuary

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN status |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 3 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 4 | *Capparis grandis* | Tree Caper, Grand Caper | Thotti maram | Capparaceae | Native | NA |
| 5 | *Polycarpaea corymbosa* | Oldman's Cap | Nilaisadachi | Caryophyllaceae | Native | NA |
| 6 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 7 | *Malvastrum coromandelianum subsp. cor omandelianum* | False mallow, Broom weed, Clock plant, Prickly malvastrum | | Malvaceae | Native | NA |
| 8 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 9 | *Sida rhombifolia* | Cuban jute, Jelly leaf, | Kurundotti | Malvaceae | Native | |
| 10 | *Thespesia populnea* | Indian tulip tree | Puvarasu maram | Malvaceae | Native | LC |
| 11 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 12 | *Oxalis corniculata* | Creeping Wood Sorrel | Puliyarai, Paliakiri | Oxalidaceae | Invasive | NA |
| 13 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 14 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 15 | *Albizia saman* | Rain Tree | Thoongumoonji maram | Fabaceae | Exotic | NA |
| 16 | *Cajanus scarabaeoides* | Showy Pigeonpea | Kaattu-kollu Chedi | Fabaceae | Native | LC |
| 17 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 18 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 19 | *Peltophorum pterocarpum* | Copperpod, Rusty shield bearer, | konraivagai | Fabaceae | Introduced | NA |
| 20 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 21 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 22 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 23 | *Senegalia caesia* | | Indu | Fabaceae | Native | NA |
| 24 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 25 | *Senna occidentalis* | Coffee senna | Nattamtakarai, Payaverai | Fabaceae | Native | NA |
| 26 | *Senna siamea* | Siamese Senna | Manjal konrai | Fabaceae | Native | LC |
| 27 | *Sesbania procumbens* | Trailing sesbans | | Fabaceae | Native | NA |
| 28 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 29 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 30 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 31 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 32 | *Terminalia arjuna* | Arjun | Marudhu | Combretaceae | Native | NA |
| 33 | *Eucalyptus tereticornis* | Forest Red Gum | | Myrtaceae | Exotic | NA |
| 34 | *Syzygium cumini* | Java plum | Naaval plum | Myrtaceae | Native | NA |
| 35 | *Turnera subulata* | White Alder | | Turneraceae | Invasive | NA |
| 36 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 37 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 38 | *Trianthema portulacastrum* | Desert Horse Purslane | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 39 | *Spermacoce pusilla* | Tiny False Buttonweed | | Rubiaceae | Native | NA |
| 40 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 41 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 42 | *Sphaeranthus indicus* | East Indian Globe Thistle | Visnukkarantai | Asteraceae | Native | LC |
| 43 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 44 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 45 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 46 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 47 | *Marsdenia volubilis* | Sneeze Wort, Cotton milk plant | Kotippalai | Apocynaceae | Native | NA |
| 48 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 49 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 50 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, | Paalai | Apocynaceae | Native | LC |
| 51 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 52 | *Physalis angulata* | Cutleaf Ground Cherry | | Solanaceae | Native | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 53 | *Solanum mauritianum* | Tree Tobacco, Flannel Weed, | | Solanaceae | Naturalized | |
| 54 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 55 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 56 | *Utricularia vulgaris* | Greater Bladderwort | | Lentibulariaceae | Introduced | LC |
| 57 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 58 | *Tecoma stans* | Yellow bells | Sonnapatti | Bignoniaceae | Exotic | NA |
| 59 | *Pedalium murex* | Large caltrops | Yanai nerunji, Perunerunji | Pedaliaceae | Native | NA |
| 60 | *Martynia annua* | Devil's Claws | Thaelkodukkudai | Martyniaceae | Native | NA |
| 61 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |
| 62 | *Justicia adhatoda* | Malabar Nut, white vasa | acalai, atatotai, attucam, | Acanthaceae | Native | |
| 63 | *Justicia tranquebariensis* | Tarangambadi Justicia | Punnaku Poodu | Acanthaceae | Native | |
| 64 | *Stachytarpheta jamaicensis* | Blue Porterweed | Seemai Nayuruvi | Verbenaceae | Native | NA |
| 65 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 66 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 67 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 68 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 69 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 70 | *Amaranthus spinosus* | Prickly Amaranth | Mullukkeerai | Amaranthaceae | Exotic | NA |
| 71 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 72 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 73 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 74 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 75 | *Breynia vitis-idaea* | Mountain Coffee Bush | | Phyllanthaceae | Native | NA |
| 76 | *Phyllanthus maderaspatensis* | Madras Leaf flower | Nilanelli | Phyllanthaceae | Native | NA |
| 77 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhanelli | Phyllanthaceae | Native | NA |
| 78 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 79 | *Commelina benghalensis* | Bengal Dayflower | Adutinnathalai | Commelinaceae | Native | LC |
| 80 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 81 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai | Arecaceae | Native | NA |
| 82 | *Pistia stratiotes* | Water cabbage, Nile cabbage | Agasatamarai, | Araceae | Native | LC |
| 83 | *Spirodela polyrhiza* | Duckweed | | Araceae | Native | LC |
| 84 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 85 | *Cyrtococcum trigonum* | | --- | Poaceae | Native | NA |
| 86 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 87 | *Echinochloa crus-galli* | Barnyard Grass | | Poaceae | Native | LC |
| 88 | *Eragrostis amabilis* | Japanese Lovegrass | | Poaceae | Native | NA |
| 89 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 90 | *Setaria verticillata* | Bristly Foxtail | Amarippul | Poaceae | Alien | NA |
| 91 | *Sporobolus tenuissimus* | | | Poaceae | Introduced | |
| 92 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul | Poaceae | Native | NA |
| 93 | *Marsilea quadrifolia* | Water Clover | Aararipattai | Marsileaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.8a: List of Insects species recorded along the Udayamarthandapuram Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 5 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |

Table 30.8b: List of Butterflies and Moth species recorded along the Udayamarthandapuram Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Common Evening Brown | *Melanitis leda* | Satyrinae | Common |
| 5 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 6 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |
| 7 | Heliotrope Moth | *Utetheisa pulchelloides* | Erebidae | Common |

Table 30.8c: List of Odonata species recorded along the Udayamarthandapuram Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 30.8d: List of Arachnida species recorded along the Udayamarthandapuram Bird Sanctuary

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 30.8e: List of Fish species recorded along the Udayamarthandapuram Bird Sanctuary

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.8f: List of Reptiles species recorded along the Udayamarthandapuram Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 30.8g: List of Bird species recorded along the Udayamarthandapuram Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 4 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 5 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 8 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 9 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 10 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 11 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 12 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 13 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 14 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 15 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 16 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 17 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 18 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 19 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 20 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 21 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 22 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 23 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 24 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 25 | Oriental Magpie Robin | *Copsychus saularis* | Muscicapidae | Least Concern |
| 26 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 27 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

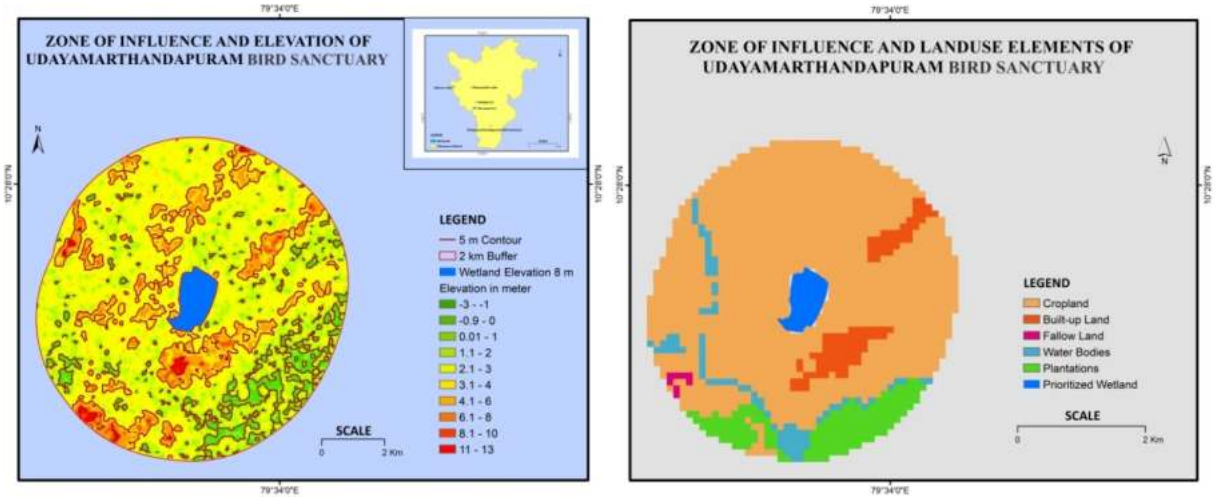
Table 30.8h: List of Mammal species recorded around Udayamarthandapuram Bird Sanctuary

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |
| 5 | Indian grey Mongoose | *Herpestes edwardsi* | Herpestidae | Least Concern |

**Map 30.6: Comparative google imagery for Udayamarthandapuram Bird Sanctuary**




**Map30.7: Zone of Influence around the Udayamarthandapuram Bird Sanctuary**



**Vadakku Eri**

**Lake Survey Number**: Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Vadakku eri also called kezhadhulasenthrapura eri orKannarampettai lake (Plate 73)

1.2 Villages that surround the wetland include Kannaram pettai, Mebalathottam, Thokubikad, Kezhadhulasenthrapura.

1.3 & 1.4 The lake is based in Mannargudi taluka in Thiruvalur District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 35'51.5" N; 10° 35'59.5" N; and Longitude: 079° 27'32.2 E; 079° 27'44.6" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD Tamil Nadu.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 46.3 hectares (Map 30.8).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent wetland.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 26 to 33 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and Bhamani River a tributary of Cauvery.
b) The water in the wetland is mostly of intermittent in nature and last for about 4 months.
c) The water also helps in replenishingthe groundwater, feeds the smaller wetlands around and the agriculture lands.
d) The pH of the water was not recorded as the wetland was dry during our visit.
e) The lake has fresh water as per the discussions with the locals.
f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation, however this cannot be conformed as the wetland was dry during our visit.

2.6 Climatic setting

a) Rainfall for the month of February in Thiruvaur was 2.7 mm.
b) The atmospheric temperature was 31.7°C and the humidity was 62 %.

2.7 The area of zone of influence is 1843.25 hectares with a fixed buffer area of 2 kms around the wetland (Map 30.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 0%; |
| Agriculture 80%; | Settlement (Rural) 20%; |
| Settlement (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2009 and 2018 is given in Map 30.8 & 30.9.

**Section III- Biodiversity**

3.1 List of Plant species: 44 species of plants were recorded around the wetland during our visit (Table 30.9).

3.2 List of animal species: 32 animal species including 3 domestic species were recorded during the survey (Table 30.10a-h).

3.3 Species of Conservation importance: No Threatened species were observed during the survey (Table 30.10a-h).

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornia crassipes* and *Ipomoea sp.*formed nearly 60 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around the wetland and the ground water is used for irrigation.

4.3 Commercial fishery is not undertaken in the lake, recreational fishery is also practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.7 It is a major source of ground water recharge.

4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.9 The wetland has a few temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.

4.10 The site is only majorly used by the farmers only

4.11 There is no agriculture or plantation activities within the wetland.

4.12 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.13 The wetland supports a diversity of local fishery.

4.14 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is not undertaken.

5.2 Agriculture is undertaken around the wetland.

5.3 Grazing by the cattle is undertaken.

5.4 There is withdrawal of water for agriculture.

5.5 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The lack of water due to poor rains has formed a serious threat in its present condition.

6.3 There is no organized fishing activity.

6.4 Solid waste dumping and garbage burning is becoming a issue around the wetland.

**Section VII Notification Category**

The wetland is not protected or conserved under any laws and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form solid waste dumping although.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The wetland recives very little water that needs to be addressed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Kannarampettai lake

Aravind Amirtharaj (Feb. 12, 2017) ebirds Checklist. (ebird.org/hotspot/ L4558311? yr=all &m=&rank=mrec)

Table 30.9: List of Plant species recorded along the Vadakku Eri

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN status |
|---|---|---|---|---|---|---|
| 1 | *Tiliacora acuminata* | Tapering-Leaf Tiliacora | Perunkattukkoti | Menispermaceae | Native | |
| 2 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 3 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, Kaattu kasturi | Malvaceae | Native | NA |
| 4 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 7 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 8 | *Cayratia trifolia* | Bush Grape | Kattuppirantai | Vitaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Sesbania sesban* | Common Sesban, | | Fabaceae | Native | NA |
| 11 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 12 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Terminalia catappa* | Indian Almond | Nattuvadumai, Vadumai | Combretaceae | Native | NA |
| 15 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 16 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 17 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 18 | *Oldenlandia umbellata* | Chay Root, Indian madder, Choy root | Chayam, Chayaver, Emboorel, Imbura-ver | Rubiaceae | Native | |
| 19 | *Cyanthillium cinereum* | Purple fleabane | Neichity | Asteraceae | Native | NA |
| 20 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 21 | *Xanthium strumarium* | Common Cocklebur | Ottarachedi | Asteraceae | Native | NA |
| 22 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 23 | *Wrightia tinctoria* | Sweet indrajao, Palaindigo plant, Dyer's oleander | Paalai | Apocynaceae | Native | LC |
| 24 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 25 | *Heliotropium curassavicum* | Seaside Heliotrope, Wild heliotrope, Salt heliotrope | | Heliotropiaceae | Naturalized | LC |
| 26 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 27 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 28 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 29 | *Stachytarpheta jamaicensis* | Blue Porterweed | Seemai Nayuruvi | Verbenaceae | Native | NA |
| 30 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 31 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 32 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 33 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 34 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 35 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 36 | *Jatropha tanjorensis* | Tanjore jatropha | | Euphorbiaceae | Native | NA |
| 37 | *Tragia plukenetii* | Cannabis Leaf Nettle, Noseburn | | Euphorbiaceae | Native | |
| 38 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 39 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 40 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 41 | *Cyperus dubius* | White Water Sedge | Veluttha nirbasi | Cyperaceae | Native | LC |
| 42 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 43 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 44 | *Saccharum spontaneum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.10a: List of Insect species recorded along the Vadakku Eri

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 30.10b: List of Butterfly species recorded along the Vadakku Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 30.10c: List of Odonate species recorded along the Vadakku Eri

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 30.10d: List of Fish species recorded along the Vadakku Eri

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 6 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 7 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.10e: List of Amphibian species recorded along the Vadakku Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |

Table 30.10f: List of Reptile species recorded along the Vadakku Eri

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 30.10g: List of Bird species recorded along the Vadakku Eri

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 2 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 3 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 4 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 5 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 6 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 7 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 8 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 9 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 10 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 11 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |

Table 30.10h: List of Mammal species recorded along the Vadakku Eri

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

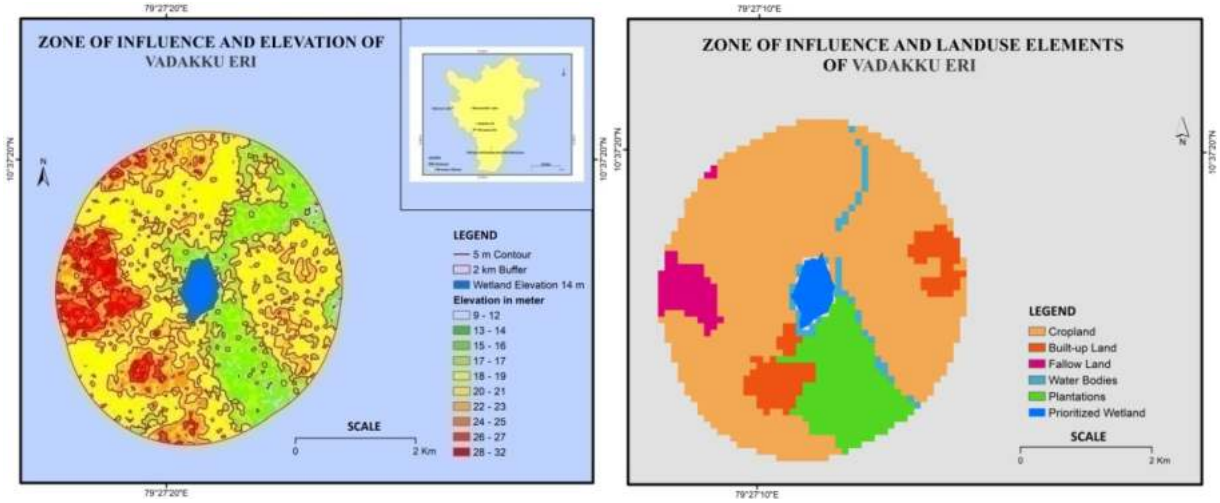
**Map 30.8: Comparative google imagery for Vadakku Eri**







**Map 30.9: Zone of influence around the Vadakku Eri**



**Vaduvur Lake**

**Lake Survey Number:** Not provided.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Vaduvur bird sanctuary Lake (Plate 74).

1.2 Villages that surround the wetland include Vadavoor, Thenpathi, Vadapathy, Pudukottai, Meyvasal, Kondaiyur.

1.3 & 1.4 The lake is based in Thiruvaroor District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 10° 41'48.5" N; 10° 41'49.7" N; 10° 41'54.4" N; and Longitude: 079° 18'57.5" E; 079° 19'02.9" E; 079° 19'21.4" E;

1.6 The wetland is a Protected Area.

1.7 The wetland comes under the jurisdiction of Tamil Nadu Forest Department,

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 111 hectares (Map 30.10).

2.2 The Wetland type - the wetland belongs to the Man-made (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 36 to 38 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and form Vadavour River and Cauvery River channels.
b) The water in the wetland is intermitent nature with some water is present only for a six to eight months, as the wetland is mostly dependant on the rainfall and runoff waters.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields and Kananaru River.
d) The pH of the water was 8.8.
e) The lake has fresh water as as the salinity recorded was 0.317 ppt.
f) The wetland had *Ipomoea, Prosopis, Lantana, Eichornea crassipes* and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of February 2018 in Tiruvarur was 2.7 mm.
b) The atmospheric temperature varied between 31 and 34.7 and the humidity was 42 %

2.7 The area of zone of influence is 2174.16 hectares with a fixed buffer area of 2 kms around the wetland (Map 30.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0 %; | Grasslands/scrublands 20%; |
| Agricultural lands 60%; | Settlements (Rural) 20%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2002 and 2017 is given in Map 30.10 & 30.11.

**Section III- Biodiversity**

3.1 List of Plant species: 56 species of plants were recorded around the wetland during our visit (Table 30.11).

3.2 List of animal species: 107 animal species including 4 domestic species were recorded during the survey (List attached - Table 30.12a-h).

3.3 Species of Conservation importance: Two Threatened species of birds and one species of fish were observed during the survey (Table 30.12a-h).

3.4 Major Plant invasive alien species and extent of invasion: 13 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The Village Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The farmlands around use the water form both wetland and borewell water.

4.3 Fishery is not undertaken.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any other purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is runoff form the surrounding area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present.

4.11 The site is majorly used by the locals for grazing their cattle and goats.

4.12 There are no agriculture or plantation activities within the wetland.

4.13 The wetland provides a suitable habitat for aquatic and terrestrial birds as we also recorded many bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

4.16 The bird sanctuary is frequented by nature lovers and bird enthusiast; there is also a walking path for the local tourist.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is agriculture not undertaken within the wetlands

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture or fishery purpose.

5.6 The locals are well aware of the importance of the wetland.

5.7 The wetland has a good number of tourist for bird observation.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

6.2 The wetland is besides a road that has high traffic.

**Section VII Notification Category**

The wetland is a bird sanctuary and has the protection of the forest department and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form invasive species and the road traffic that is gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Vaduvur Lake**


Karthi N., Vachanth M.C. and Sridharan G. (2013) Studies on phytoplankton diversity in Vaduvur Lake at Thiruvarur District, Tamil Nadu, India, *Biological Science* 3, 2013, Pp. 227-230.

Krishma Mili, Sangram Keshari Rout, Debasmita Jana, Annupama R.R. and Sriparna Chakraborty (2017) Assessing the Phytoplankton Population of Hard Water Ponds in Eastern Kolkata, India, *Environment & Ecology*, 35 (4B), 3087-3092, Oct-Dec 2017, ISSN 0970-0420.

Prasad S.N., Jaggi A.K., Kaushik P., Vijayan L., Muralidharan S. and Vijayan V.S. (2004) Inland wetlands of India, Conservation Atlas, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India, 222.

Thirumalai P. and Kumar S.M. (2017) Changing cropping pattern in Thiruvarur district using GIS, *International Journal of Humanities and Social Science Research*, ISSN: 2455-2070; Volume 3; Issue 2; February 2017; Pp. 89-95.

Vijayan V.S., Narendra Prasad S., Lalitha V. and Muralidharan S. (2004) Inland wetlands of India: Conservation Priorities. SACON, pp. 532.


Table 30.11. List of Plant species recorded along the Vaduvur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nymphaea nouchali var. pubescens* | Pink water lily,Pink lotus | Vellambal | Nymphaeaceae | Native | LC |
| 2 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 3 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 4 | *Gynandropsis gynandra* | Wild Spider Flower | Taivelai, Nalvelai | Cleomaceae | Native | NA |
| 5 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 6 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 7 | *Pavonia leptocalyx* | Fragrant Swamp Mallow | Peramutti, Avibattam | Malvaceae | Native | NA |
| 8 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 9 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 10 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 11 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 12 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 13 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 14 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 17 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 19 | *Cassia fistula* | Golden shower tree | Konrai | Caesalpiniaceae | Native | NA |
| 20 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 21 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 22 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 23 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 24 | *Spermacoce ocymoides* | Purple leaved button | | Rubiaceae | Native | LC |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 26 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 27 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 28 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 29 | *Plumbago zeylanica* | Chitrak | Chittiramoolam, Karimai | Plumbaginaceae | Native | NA |
| 30 | *Nerium oleander* | Oleander | Arali | Apocynaceae | Native | LC |
| 31 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 32 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 33 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 34 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 35 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 36 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 37 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |
| 38 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 39 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 40 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 41 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 42 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 43 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 44 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 45 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 46 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 47 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 48 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 49 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 50 | *Commelina diffusa subsp. diffusa* | | | Commelinaceae | Native | |
| 51 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 52 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 53 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 54 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 55 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 56 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.12a: List of Insects recorded along the Vaduvur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Hooded Grasshopper | *Teratodes monticollis* | Acrididae |
| 4 | Colour Grasshopper | *Neorthacris acuticeps* | Pyrgomorphidae |
| 5 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 6 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 7 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 8 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 9 | Weaver Ant | *Oecophylla smaragdina* | Formicidae |
| 10 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 11 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 12 | Bicolour Ant | *Meranoplus bicolor* | Formicidae |
| 13 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 14 | Polished Leaf-Border Ant | *Leptogenys chinensis* | Formicidae |
| 15 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 16 | Pharaoh Ant | *Monomorium pharaonis* | Formicidae |
| 17 | Orange Spider Wasp | *Cryptocheilus bicolor* | Pompilidae |
| 18 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |
| 19 | Indian Robber fly | *Asilidae sp.* | Asilidae |

Table 30.12b: List of Butterflies recorded along the Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Indian Palm Bob | *Suastus gremius* | Hesperiinae | Common |
| 2 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Common Mormon | *Papilio polytes* | Papilioninae | Common |
| 5 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 6 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 7 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 8 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 9 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 10 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 11 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 12 | Common Pierrot | *Castalius rosimon* | Polyommatinae | Common |
| 13 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 14 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 15 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 16 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 17 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 18 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 30.12c: List of Dragonflies recorded along the Vaduvur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 3 | Pigmy Dartlet | *Agriocnemis pygmaea* | Coenagrionidae | Common |
| 4 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 5 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 6 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 7 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 8 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 30.12d: List of Arachnida recorded along the Vaduvur Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 30.12e: List of Fishes recorded along the Vaduvur Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 30.12f: List of Reptiles recorded along the VaduvurLake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 30.12g: List of Birds recorded along the Vaduvur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Lesser Whistling-duck | *Dendrocygna javanica* | Anatidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 3 | Northern Shoveler | *Anas clypeata* | Anatidae | Least Concern |
| 4 | Northern Pintail | *Anas acuta* | Anatidae | Least Concern |
| 5 | Garganey | *Anas querquedula* | Anatidae | Least Concern |
| 6 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 7 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 8 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 9 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 10 | Striated Heron | *Butorides striata* | Ardeidae | Least Concern |
| 11 | Black-crowned Night Heron | *Nycticorax nycticorax* | Ardeidae | Least Concern |
| 12 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 13 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 14 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 15 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 16 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 17 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 18 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 19 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 20 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 21 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 22 | Black Kite | *Milvus migrans* | Accipitridae | Least Concern |
| 23 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 24 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 25 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 26 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 27 | Pheasant-tailed Jacana | *Hydrophasianus chirurgus* | Jacanidae | Least Concern |
| 28 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 29 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 30 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 31 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 32 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 33 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 34 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 35 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 36 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 37 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 38 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 39 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 40 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 41 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 42 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 43 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 44 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 45 | Rosy Starling | *Pastor roseus* | Sturnidae | Least Concern |
| 46 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 47 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

Table 30.12h: List of Mammals recorded along the Vaduvur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

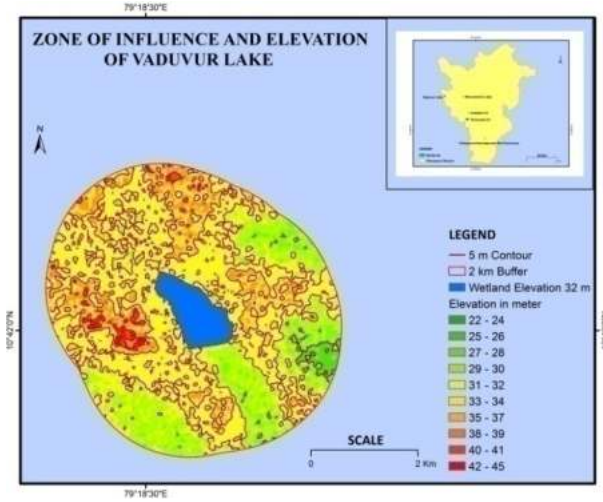
**Map 30.10: Comparative Google imagery for Vaduvur Lake**

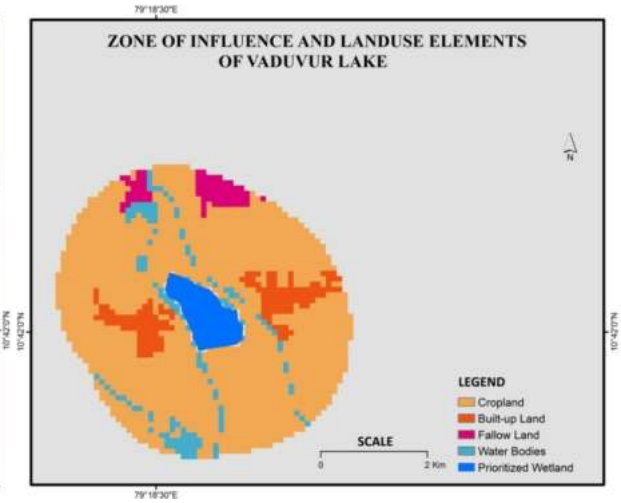






**Map 30.11: The zone of influence around the Vaduvur lake.**



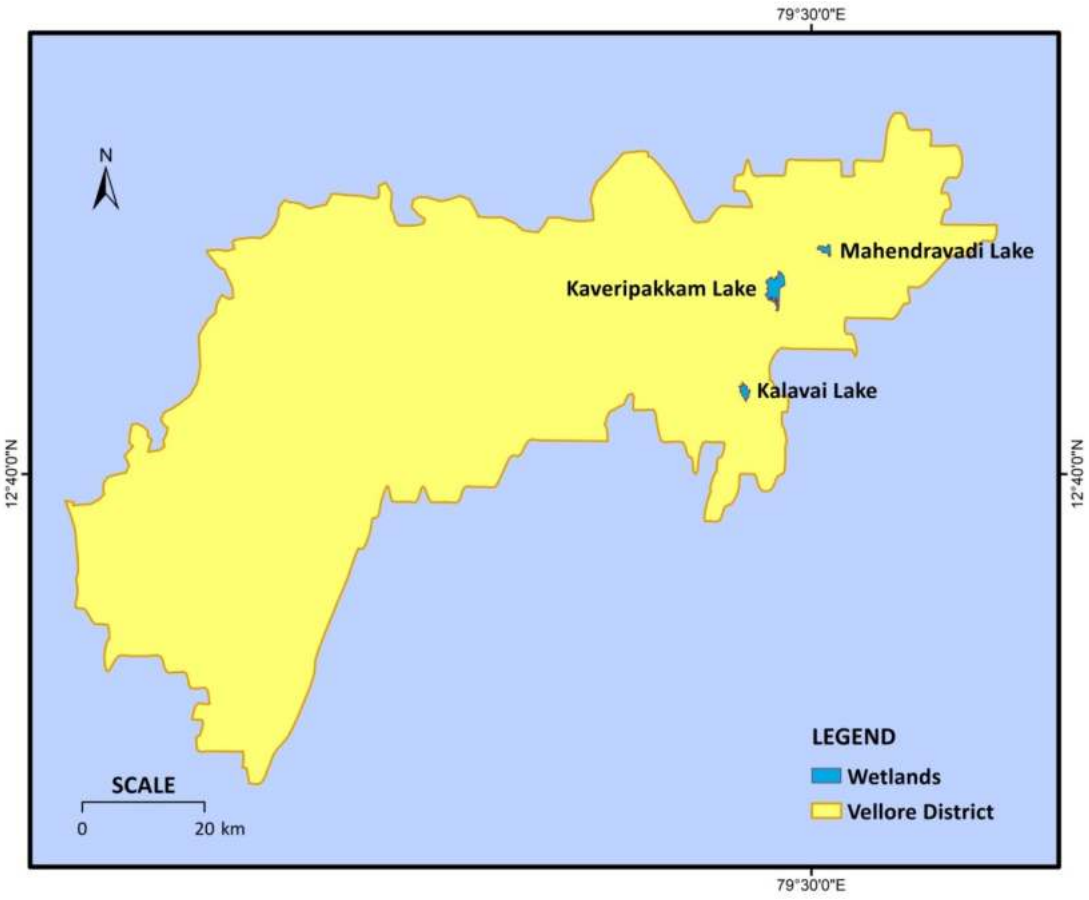
## 31. Vellore District

### 1. Introduction

Vellore is bounded on the northeast by Thiruvallur District, on the southeast by Kanchipuram District, on the south by Tiruvannamalai District, on the southwest by Krishnagiri District, and on the northwest and north by Andhra Pradesh state. Vellore had the previlege of being the seat of the Pallava, Chola, Nayak, Maratha, Arcot Nawabs and Bijapur Sultan Kingdoms. It was described as the best and the strongest fortress in the Carnatic War in the 17th Century.

Total geographic area of Vellore is 6077 km². Total area under wetland is 32640 ha, which includes 354 small wetland (<2.25 ha). Lakes/Ponds occupy 48.06% of wetland area. The second major wetland type is Tanks/Ponds. There are 561 Tanks/Ponds with 7973 ha area (24.43%). Area under River/Stream is 8511 ha (26.08 %).

For preparing the brief document the Kaveripakkam Lake was selected form the Vellore district based on its size and its ecological importance (Map 31.1) the other two wetlands were selected on the basis of google imagery.




**Map 31.1: Wetlands of Vellore district assessed for Prioritization**

### Observations

Of the three wetlands selected in the district, Kaveribakkam is the largest while Mahendravadi is the smaller of the three wetlands. Around the wetlands, we recorded 89 plant species both aquatic and terrestrial including 14 invasive species (Table 31.1). The faunal components totaled 100 species with the representation of 38 bird species including

the wetland birds. During the field study we observed that Kalavai Lake was Mesotrophic while the other two wetlands were Oligotrophic in status (Table 31.2). The water quality was comparatively better in Mahendravadilake than the other two wetlands. The soil is regularly hydrated annually and hence it also forms a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Elandaikudam wetland. Mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Kalavai Lake
2. Mahendravadi Lake
3. Kaveripakkam Lake

Table 31.1: The water and soil quality assessed form the wetlands of Vellore District

| S. No | Name of the Wetland | Plants (Invasives) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Kaveripakkam Lake | 41(9) | 7 | 7 | 9 | 2 | 11 | 0 | 2 | 24 | 3 |
| 2 | Mahendravadi Lake | 34(8) | 4 | 6 | 4 | 0 | 4 | 0 | 1 | 14 | 4 |
| 3 | Kalavai Lake | 42(8) | 5 | 5 | 17 | 0 | 6 | 2 | 1 | 22 | 5 |
| | Total | 89(14) | 8 | 10 | 19 | 2 | 14 | 2 | 2 | 38 | 5 |

Table 31.2: The water and soil quality assessed form the wetlands of Vellore District

| District Name | Vellore | | |
|---|---|---|---|
| **Wetland Name** | Kalavai Lake | Kaveripakkam Lake | Mahendravadi Lake |
| **Wetland area(ha)** | 279 | 977 | 215 |
| **Buffer Area in Hectare (ha)** | 2881.42 | 4653.22 | 2695.64 |
| **Air Temperature °C** | 29 | 33.5 | 31.5 |
| **Water Temperature °C** | 28.4 | 31.6 | 31 |
| **Humidity %** | 58 | 46 | 42 |
| **Nutrients in Water** | Mesotrophic | Oligotrophic | Oligotrophic |
| **Water pH** | 9.03 | 8.1 | 8.89 |
| **Water TDS ppm** | 1480 | 634 | 1500 |
| **Water Conductivity ppm** | 2090 | 1572 | 1550 |
| **Light Penetration cms** | 12 | 120 | 30 |
| **Water Salinity ppt** | 1.06 | 0.532 | 0.777 |
| **DO mg/L** | 0.51 | 6.71 | 0.41 |
| **PO4P mg/L** | 0.010 | 0.015 | 0.008 |
| **Water Na ppm** | 514 | 131 | 592 |
| **Water K ppm** | 9.6 | 7.1 | 9.4 |
| **Water Li ppm** | 0.3 | 0.1 | 0.3 |
| **Water Ca ppm** | 99.2 | 48.7 | 102.8 |
| **Soil Colour code** | 7.5YR 5/3 | | 7.5YR 5/3 |
| **Soil Colour** | Brown | soil was not accessible | Brown |
| **Soil pH** | 7.99 | | 7.3 |
| **Soil TDS ppm** | 690 | | 423 |
| **Soil Conductivity ppm** | 973 | | 596 |
| **Soil Salinity ppt** | 0.483 | | 0.289 |
| **Soil Na ppm** | 63.1 | | 51.8 |
| **Soil K ppm** | 10.8 | | 5.7 |
| **Soil Li ppm** | 0.2 | | 0.1 |
| **Soil Ca ppm** | 53.6 | | 34 |

**Kalavai Lake**

**Lake Survey Number:** 350

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kalavai eri (Plate75), it is also knowm as Akram ellei eri.

1.2 Villages that surround the wetland include Nethapakkam, Agaram, Allalacheri.

1.3 & 1.4 The lake is based in Arcot taluka in Vellore district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 46'54.2" N; 12° 46'56.1" N; 12° 47'00.1" N; 12° 46'29.7" Nand Longitde: 079° 23'50.1" E; 079° 23'54.7" E; 079° 23'59.6" E; 079° 24'13.0" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 279 hectares (Map 31.2).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category permanent tank.

2.3 Based on the secondary information the average depth is 2.5 to 4 meters for the wetland.

2.4 The elevation of the wetland is 139 to 141 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area. And Metur Dam channel and Palar River.
b) The water in the wetland is permanent in nature when water is in good quantity.
c) The water form the wetlands helps in replenishing the groundwater and the overflow joins the adjoining ten village tanks and agriculture fields.
d) The pH of the water was 9.03.
e) The salinity of the lake was 1.06 ppt.
f) The wetland had *Ipomoea, Prosopis juliflora, Parthenium, Lantana camara* and other weeds that dominated the landscape i.e 50%.

2.6 Climatic setting

a) Rainfall for the month of August, 2018 in Vellore was 0.3 mm.
b) The atmospheric temperature was 29°C and the humidity was 58 %.

2.7 The area of zone of influence is 2881.42 hectares with a fixed buffer area of 2 kms around the wetland (Map 31.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 90%; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2006 and 2018 is given in Map 31.2 & 31.3.

**Section III- Biodiversity**

3.1 List of Plant species: 41 species of plants were recorded around the wetland during our visit (Table 31.3).

3.2 List of animal species: 63 animal species including 4 domestic species were recorded during the survey (Table 31.4a-h).

3.3 Species of Conservation importance: One Threatened species of fish were observed during the survey (Table 31.4a-h).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Prosopis juliflora* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the agricultural lands and ten village tanks.
4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The PWD issues annual tenders.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has a major temple along its viscinity and major cultural and religious activities are performed in the wetland. The surrounding area of the wetland is heavily encroached upon.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture and as toilet.
4.12 There are agriculture and plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are not aware of the importance of the wetland and the locals are heavily encroaching into the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change, mainly form agriculture practices and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The agricultute within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Kalavai Lake

Table 31.3: List of Plant species recorded along the Kalavai Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN status |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Aforhybanthus enneaspermus* | Spade Flower | Orilaithamarai | Violaceae | Native | NA |
| 3 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 4 | *Abelmoschus ficulneus* | White wild Musk Mallow | Kattu Vendai | Malvaceae | Native | NA |
| 5 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 8 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 9 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 10 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 11 | *Mangifera indica* | Mango | Ma | Anacardiaceae | Native | DD |
| 12 | *Indigofera linifolia* | Narrowleaf Indigo | Iraththina Maalai | Fabaceae | Native | LC |
| 13 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 14 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 15 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 16 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 17 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 18 | *Morinda coreia* | Indian Mulberry, | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 21 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 22 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 23 | *Evolvulus alsinoides* | Dwarf morning glory,Slender Dwarf Morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 24 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 25 | *Striga densiflora* | Denseflower Witchweed, Agya | | Orobanchaceae | Native | NA |
| 26 | *Andrographis echioides* | False waterwillow | Gopuram tangi | Acanthaceae | Native | NA |
| 27 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 28 | *Stachytarpheta jamaicensis* | Blue Porterweed | Seemai Nayuruvi | Verbenaceae | Native | NA |
| 29 | *Amaranthus spinosus* | Prickly Amaranth | Mullukkeerai | Amaranthaceae | Exotic | NA |
| 30 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 31 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 32 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 33 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 34 | *Euphorbia antiquorum* | Triangular Spurge, Square Spurge, Fleshy spurge | Chaturakalli, Kalli, Kantiravam, Tiruvargalli | Euphorbiaceae | Native | |
| 35 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 36 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 37 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 38 | *Cyperus corymbosus* | Peri peri | | Cyperaceae | Native | NA |
| 39 | *Aristida adscensionis* | | | Poaceae | Native | NA |
| 40 | *Cymbopogon citratus* | Lemon grass | | Poaceae | Native | NA |
| 41 | *Perotis indica* | *Indian comet grass* | Narival,Kudiraival pullu,thopparai pullu | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 31.4a: List of Insect species recorded along the Kalavai Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 2 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 3 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 5 | Indian Robber fly | *Asilidae sp.* | Asilidae |

Table 31.4b: List of Butterfly species recorded along the Kalavai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Indian Dartlet | *Oriens goloides* | Hesperiinae | Common |
| 2 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 3 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 4 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 5 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 6 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 7 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 8 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 9 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 10 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 11 | Striped Tiger | *Danaus genutia* | Danainae | Common |
| 12 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 13 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 14 | Common Leopard | *Phalanta phalantha* | Heliconiinae | Common |
| 15 | Joker | *Byblia ilithyia* | Biblidinae | Common |
| 16 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 17 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |

Table 31.4c: List of Odonata species recorded along the Kalavai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 31.4d: List of Fish species recorded form the Kalavai Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 3 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 4 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 5 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 6 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |

Table 31.4e: List of Amphibian species recorded form the Kalavai Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |
| 2 | Indian Pond Forg | *Euphlyctis hexadactylus* | Dicroglossidae | Least Concern |

Table 31.4f: List of Reptile species recorded along the Kalavai Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 31.4g: List of Bird species recorded along the Kalavai Lake

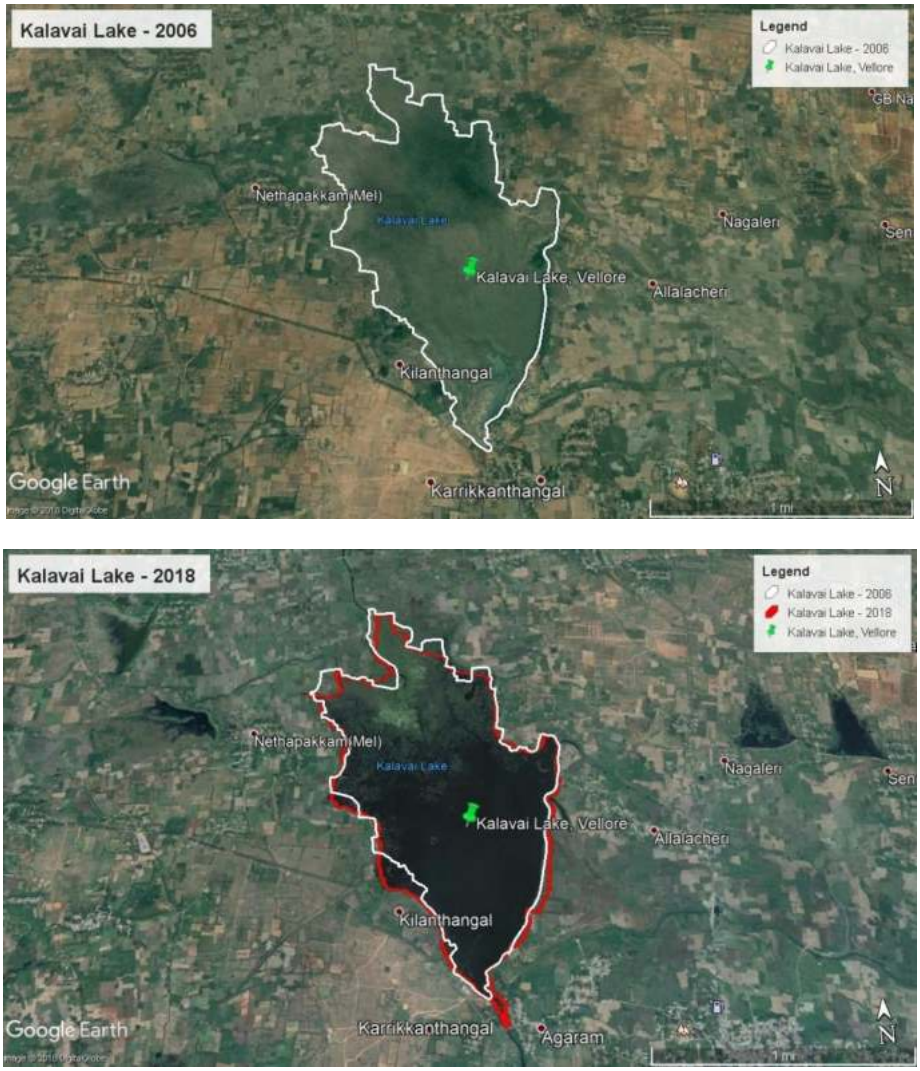
| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 3 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 4 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 5 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 6 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 7 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 8 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 9 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 10 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 11 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 14 | Jerdon's Bushlark | *Mirafra affinis* | Alaudidae | Least Concern |
| 15 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 16 | Zitting Cisticola | *Cisticola juncidis* | Cisticolidae | Least Concern |
| 17 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 18 | Brahminy Starling | *Sturnia pagodarum* | Sturnidae | Least Concern |
| 19 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 20 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 21 | Baya Weaver | *Ploceus philippinus* | Ploceidae | Least Concern |
| 22 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

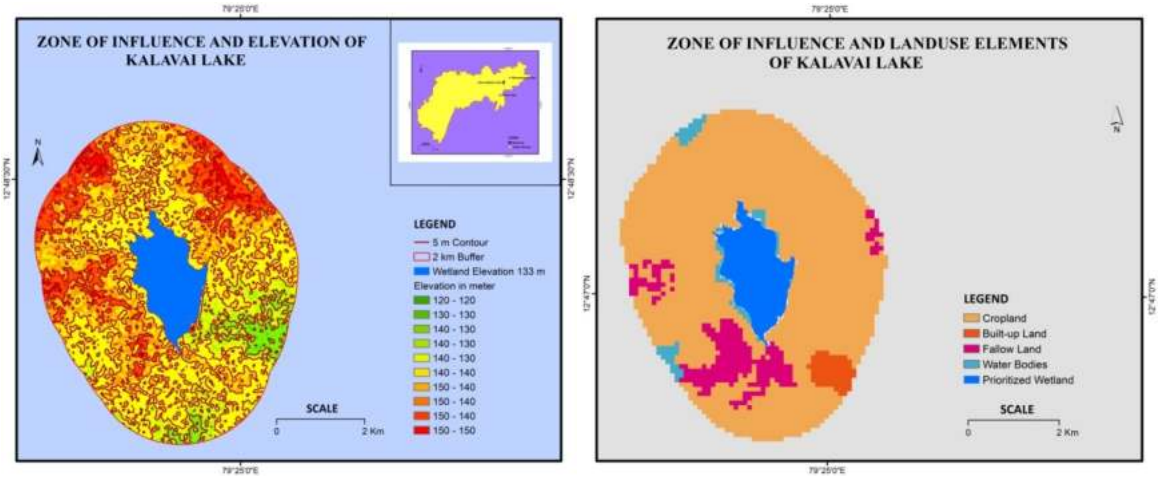
Table 31.4h: List of Mammal species recorded along the Kalavai Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 31.2: Comparative google imagery for Kalavai lake**




**Map 31.3: Zone of Influence around the Kalavai Lake**



**Kaveripakkam Lake**

**Lake Survey Number:** Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kaveripakkam, (Plate75).

1.2 Villages that surround the wetland include Kaveripakkam, Kattalai, Ayyampettai cherry, Oparanthanagal, Eechanthangal, Mootur, Baguvali, Sumaithangi.

1.3 & 1.4 The lake is based in Vellore district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 54.34.5" N; 12° 54'40.5" N; 12° 54'51.1" N; and Longitde: 079° 27'07.6" E; 079° 27'08.2" E; 079° 27'09.1" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 977 hectares (Map 31.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category seasonal intermitent tank.

2.3 Based on the secondary information the average depth is 5 meters for the wetland.

2.4 The elevation of the wetland is 141 to 144 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area, and Palar River and Ponnaiah River system indirect influence.
b) The water in the wetland is intermittent in nature.
c) The water form the wetland helps in replenishing the groundwater and the overflow joins the adjoining village tanks and agriculture fields.
d) The pH of the water was form 8 to 8.4.
e) The salinity of the lake was 0.532 ppt.
f) The wetland had aquatic vegetation like *Ipomoea, Prosopis Juliflora* and other weeds that dominated the landscape i.e 30%.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Vellore was 0.3 mm.
b) The atmospheric temperature varied between 31.4°C and 33.5 and the humidity was form 41 to 46%.

2.7 The area of zone of influence is 4653.22 hectares with a fixed buffer area of 2 kms around the wetland (Map 31.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 10%; |
| Agricultural lands 90%; | Settlements (rural) 0%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2011 and 2017 is given in Map 31.4 & 31.5.

**Section III- Biodiversity**

3.1 List of Plant species: 38 species of plants were recorded around the wetland during our visit (Table 31.5).

3.2 List of animal species: 65 animal species including 2 domestic species were recorded during the survey (Table 31.6a-h).

3.3 Species of Conservation importance: Three Threatened species of fish were observed during the survey (Table 31.6a-h).

3.4 Major Plant invasive alien species and extent of invasion: Nine Invasive plants including *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 The overflow water feeds the agricultural lands and village tanks.

4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose. The borassus plant sap is also collected for local consumption and sale in the local market.

4.6 The wetland is not used for agriculture and serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is significant runoff form the surrounding area.

4.10 The wetland has a major temples along its viscinity and major cultural and religious activities are performed in the wetland. The surrounding area of the wetland is heavily encroached upon.

4.11 The site adjoining the wetland is majorly used by the locals for dumping garbage, release of sewage and effluents and as toilet.

4.12 There are agriculture and plantation activities within the wetland.

4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.

4.14 The wetland does support local fish species.

4.15 There is no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 The locals are not aware of the importance of the wetland and the locals are heavily encroaching into the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.

6.2 The wetland has been facing land use change pressure

6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is not is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly agriculture practices and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The agricultute within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Kaveripakkam Lake**


Jaikumar M. (2012) A Review on Water Hyacinth (Eichhornia crassipes) and Phytoremediaton to treat Aqua pollution in Velachery lake, Chennai - Tamil Nadu. *International Journal of Recent Scientific Research*, Vol. 3, Issue, 2, Pp. 95-102, February, 2012, ISSN: 0976-3031.

Rakesh Roshan Gantayat, Khyati Joshi, Karthikeyan C., Chidambaram S., Prasanna M. V., Smruti Ranjan Beuria, Nepolian M. and Illamathi T. (2016) Hydrogeochemical studies in and arround Kaveripakkam block, Vellore district, Tamil Nadu. International Journal of Geology & Earth Science.Vol. 2, No. 2. Pp 12-24.

Santhakumar B., Mohamed Samsoor Ali A. and Arun P. R. (2016) Status of Greater Spotted Eagle *Clanga clanga* in Tamil Nadu, and Puducherry, India. Indian Birds Vol. 11 No. 3, pp 71 – 74.


Table 31.5. List of Plant species recorded along the Kaveripakkam Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN status |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Corchorus tridens* | Horn-Fruited Jute | | Malvaceae | Native | NA |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 9 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 10 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 11 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 12 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 13 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 14 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 17 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 18 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 19 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 20 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 21 | *Ecbolium ligustrinum* | Green Shrimp Plant | Nilampari | Acanthaceae | Native | NA |
| 22 | *Anisomeles malabarica* | Malabar Catmint | Aruvaachadachi | Lamiaceae | Native | NA |
| 23 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 24 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 25 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 26 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 27 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 28 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 29 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 30 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 31 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 32 | *Commelina benghalensis* | Bengal Dayflower | Adutinnathalai | Commelinaceae | Native | LC |
| 33 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 34 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 35 | *Arundo donax* | Giant Reed | | Poaceae | Invasive | LC |
| 36 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 37 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 38 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

Table 31.6a: List of Insects recorded along the Kaveripakkam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 5 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 7 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 31.6b: List of Butterflies recorded along the Kaveripakkam Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 6 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 7 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 8 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 9 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |

Table 31.6c: List of Dragonflies recorded along the Kaveripakkam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Pruinosed Dartlet | *Agriocnemis femina* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 31.6d: List of Arachnida recorded along the Kaveripakkam Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Araneidae |

Table 31.6e: List of Fishes recorded form the Kaveripakkam Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Naneer Iraal | Palaemonidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 11 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 31.6f: List of Reptiles recorded along the Kaveripakkam Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

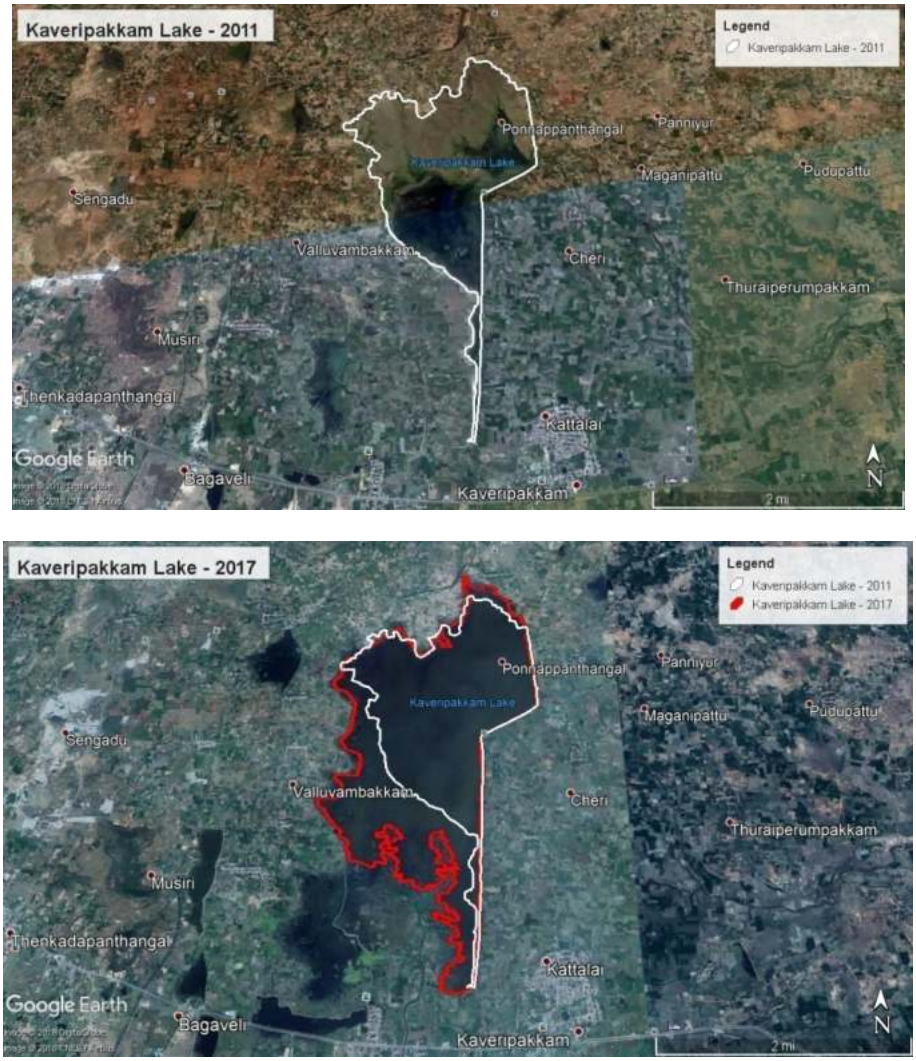
Table 31.6g: List of Birds recorded along the Kaveripakkam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 3 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 6 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 7 | Brahminy Kite | *Haliastus indus* | Accipitridae | Least Concern |
| 8 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 9 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 10 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 11 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 12 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 13 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 14 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 15 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 16 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 17 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 18 | Red-vented Bulbul | *Pycnonotus cafer* | Pycnonotidae | Least Concern |
| 19 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 20 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 21 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 22 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 23 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 24 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

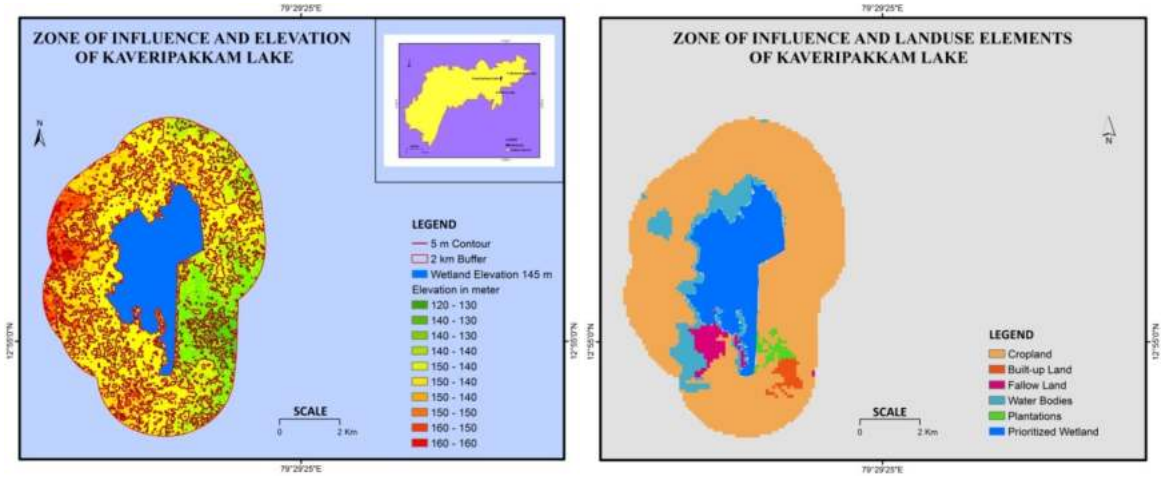
Table 31.6h: List of Mammals recorded along the Kaveripakkam Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 31.4: Comparative Google imagery for Kaveripakkam Lake**




**Map 31.5: The zone of influence around the Kaveripakkam lake.**



**Mahendrawadi Lake**

**Lake Survey Number:** 556

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Mahendrawadi eri, (Plate 76).

1.2 Villages that surround the wetland include Vedanthangal, Koothampakal, Mallimodi.

1.3 & 1.4 The lake is based in Nemeli taluka in Vellore district of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 59'39.3" N; 12° 59'27.2" N; 12° 59'21.0" N; 12° 59'20.4" N; 12° 59'36.2" N and Longitde: 079° 30'38.0" E; 079° 30'56.2" E; 079° 31'48.6" E; 079° 31'39.3" E; 079° 31'41.2" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD of Tamil Nadu state.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 215 hectares (Map 31.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) tank category in the sub category permanent tank.

2.3 Based on the secondary information the average depth is 3.5 to 4 meters for the wetland.

2.4 The elevation of the wetland is 112 to 120 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and Palar River.
b) The water in the wetland is permanent in nature when water is in good quantity.
c) The water form the wetland helps in replenishing the groundwater and the overflow joins the adjoining 12 village tanks and agriculture fields.
d) The pH of the water was 8.89.
e) The salinity of the lake was 777 ppt.
f) The wetland had *Typha, Ipomoea, Prosopis juliflora Parthenium, Lantana camara* and other weeds that dominated the landscape i.e 50%.

2.6 Climatic setting

a) Rainfall for the month of August, 2018 in Vellore was 0.3 mm.
b) The atmospheric temperature was 31.5°C and the humidity was 42 %.

2.7 The area of zone of influence is 2695.64 hectares with a fixed buffer area of 2 kms around the wetland (Map 31.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grasslands/scrublands 0%; |
| Agricultural lands 85%; | Settlements (rural) 15%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2009 and 2018 is given in Map 31.6 & 31.7.

**Section III- Biodiversity**

3.1 List of Plant species: 31 species of plants were recorded around the wetland during our visit (Table 31.7).

3.2 List of animal species: 37 animal species including 3 domestic species were recorded during the survey (Table 31.8a-g).

3.3 Species of Conservation importance: No Threatened species were observed during the survey (Table 31.8a-g)

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Prosopis juliflora* and *Ipomoea sp.*formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: invasive species Tilapia and common carps were recorded. Commercial fishing is undertaken as the wetland is controlled by the PWD who gives annual contract when the water is full.

**Section IV Ecosystem services**

4.1 The water form the wetland is used for agriculture. The municipal corporation provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 The overflow water feeds the agricultural lands and 12 village tanks.
4.3 Fishery is undertaken for commercial purpose, and some amount of recreational fishery is undertaken. The PWD issues annual tenders.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is used for agriculture and serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is significant runoff form the surrounding area.
4.10 The wetland has major temples along its viscinity and major cultural and religious activities are performed in the wetland. The surrounding area of the wetland is heavily encroached upon.
4.11 The site adjoining the wetland is majorly used by the locals for agriculture and as toilet.
4.12 There are agriculture and plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few bird species during our survey.
4.14 The wetland does support local fish species.
4.15 There is mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 The locals are aware of the importance of the wetland and the locals are heavily encroaching into the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a little potential of change in the outflow of the water.
6.2 The wetland has been facing land use change pressure.
6.3 The wetland water quality and the ecological character is changing rapidly due to lack of conservation measures.

**Section VII Notification Category**

The wetland is of historical importance as it was constructed during the Palavas period but is not a Protected Area and is below 2500 m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form landuse change mainly agriculture practices and compromise in the quality of the water.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The agricultute within the wetland should be taken care and it should be seen that it does not encroach into the wetland area any further.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for

Muthusamy R. (Sep. 29, 2015) Heritage Trail: Thiruvallam, Melpadi, Mahendravadi and Pullalur. *Know Your Heritage*. (know-your-heritage.blogspot. com/search /label /Vaishnavite%20Temple)

TNN (Oct. 21, 2017) Farmers urge govt to construct check dams across Palar, clear encroachments on channels. (timesofindia.indiatimes.com/city/chennai/farmers-urge-govt-to-construct-check-dams-across-palar-clear-encroachments-on-channels/articleshow/61158052.cms)

Ilamurugan (Jul. 29, 2018) Mahendravadi Lake, Vellore. Tamil Nadu Tourism (tamilnadu-favtourism.blogspot.com/2018/07/mahendravadi-Lake-vellore.html)

Table 31.7: List of Plant species recorded along the Mahendravadi Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nelumbo nucifera* | Sacred Water Lotus | Tamarai | Nelumbonaceae | Native | NA |
| 2 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 5 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 6 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 7 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 8 | *Opuntia stricta* | Erect Prickly Pear | Nagathali, Sappathikalli | Cactaceae | Invasive | LC |
| 9 | *Glinus oppositifolius* | Jima | Pampantra, Thura poondu | Molluginaceae | Native | NA |
| 10 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 11 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 12 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 13 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 14 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 15 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 16 | *Evolvulus alsinoides* | Dwarf morning glory | Visnukkarantai | Convolvulaceae | Naturalized | NA |
| 17 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 18 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 19 | *Commicarpus chinensis* | Diffuse Hogweed | Kodi Minnai, | Nyctaginaceae | Native | NA |
| 20 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 21 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 22 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 23 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 24 | *Asparagus racemosus* | Satawari | Tannir vittan | Asparagaceae | Native | NA |
| 25 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 26 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 27 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 28 | *Typha angustifolia* | Narrow-Leaved Cattail | | Typhaceae | Native | LC |
| 29 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 30 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 31 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 31.8a: List of Insect species recorded along the Mahendravadi Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 2 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 3 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 31.8b: List of Butterfly species recorded along the Mahendravadi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 2 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 3 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 31.8c: List of Odonata species recorded along the Mahendravadi Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 2 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 5 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 6 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 31.8d: List of Fish species recorded form the Mahendravadi Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 3 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 4 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 31.8e: List of Reptile species recorded along the Mahendravadi Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 31.8f: List of Bird species recorded along the Mahendravadi Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 4 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 5 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 6 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 7 | Red-wattled Lapwing | *Vanellus indicus* | Charadriidae | Least Concern |
| 8 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 9 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 10 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 11 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 12 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 13 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 14 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |

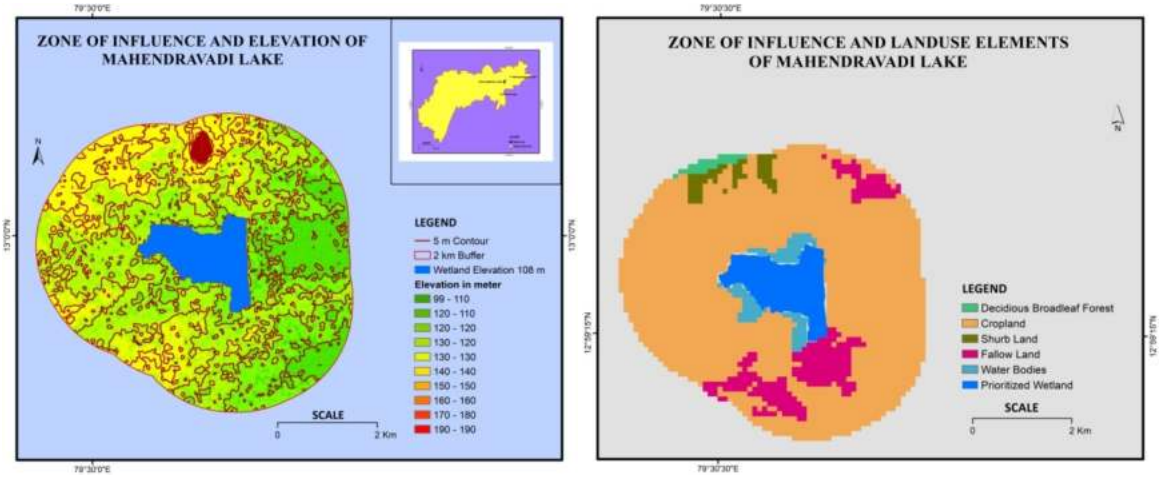
Table 31.8g: List of Mammal species recorded along the Mahendravadi Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 31.6: Comparative google imagery for Mahendravadi Lake**




**Map 31.7: Zone of Influence around the Mahendravadi Lake**



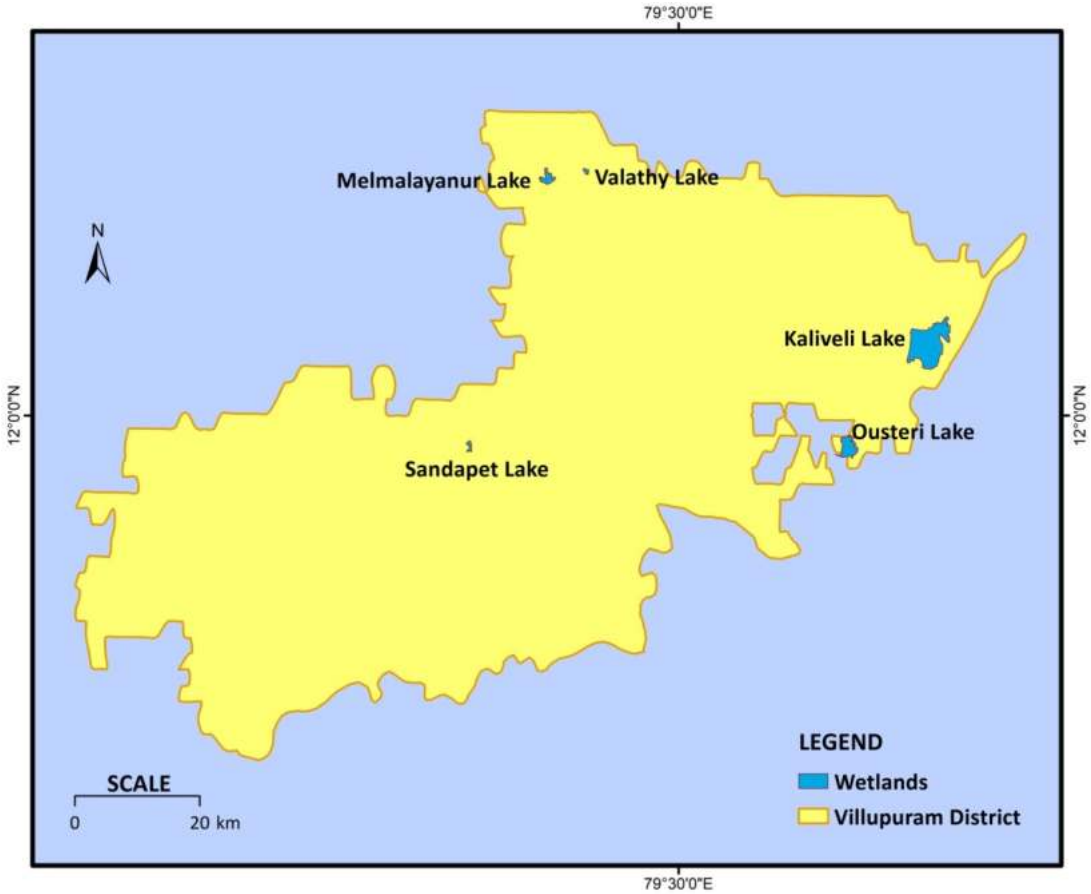
## 32. Villupuram District

### 1. Introduction

Villupuram District was earlier a part of Cuddalore District. Viluppuram or (Villupuram) district was bifurcated form the erstwhile composite Sourt Arcot district in 1993.

Total geographic area of Viluppuram is 7222.03 km². Total area under wetland is 64105 ha, which includes 596 small wetland (<2.25 ha). Lakes/Ponds occupy 30.06% of wetland area. The major wetland type in the district is Tanks/Ponds. There are 1600 Tanks/Ponds with 25850 ha area (40.32%). The other wetland types are; Inter-tidal mudflats (10.99 %), Reservoirs (2.95 %) and River/Stream (11.40 %).

SACON during 2004 had prioritized three wetlands form Villupuram district for conservation based on avian diversity and the ecosystem services provided by the wetlands. To prepare the brief document we selected these three wetlands to assess its present potential for conservation. (Map 32.1).




**Map 32.1: Wetlands of Villupuram district assessed for Prioritization**

### Observations

Of the fivewetlands selected in the district, Kaliveli lake is the largest while Valathy is the smaller of the wetlands. Around the wetlands, we recorded 107 plant species both aquatic and terrestrial including 15 invasive species (Table 2.1). The faunal components totaled 167 species with the representation of 72 bird species including the wetland birds. The field study revealed that Melmalayanur lake was dry with hydric soil. Form the other four wetlands

Sandapeth was oligotrophic while the other two were mesotrophic in status (Table 2.2). The water quality was comparatively better in Valathylake than the other wetlands. The soil is regularly hydrated annually and hence it also forms a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species, mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Melmalayanur Lake
2. Sandapet Lake
3. Kaliveli Lake
4. Ousteri Lake
5. Valathy Lake

Table 32.1: The flora and fauna recorded form the wetlands of Villupuram District

| S. No | Name of the Wetland | Plants (Invasive) | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Melmalayanur Lake | 28(6) | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 8 | 4 |
| 2 | Sandapet Lake | 46(6) | 6 | 5 | 6 | 1 | 4 | 2 | 1 | 20 | 5 |
| 3 | Kaliveli Lake | 36(8) | 8 | 8 | 10 | 1 | 19 | 0 | 2 | 55 | 5 |
| 4 | Ousteri Lake | 40(7) | 8 | 6 | 11 | 1 | 16 | 0 | 2 | 28 | 3 |
| 5 | Valathy Lake | 45(9) | 12 | 15 | 18 | 2 | 12 | 0 | 2 | 33 | 5 |
| | Total | 107(15) | 18 | 16 | 23 | 2 | 27 | 2 | 2 | 72 | 5 |

Table 32.2: The water and soil quality assessed form the wetlands of Villupuram District

| District Name | Villupuram | | | | |
|---|---|---|---|---|---|
| Wetland Name | Valathi Lake | Sandapet Lake | Ousteri Lake | Melmalayanur Lake | Kaliveli Lake |
| Wetland area (ha) | 53.6 | 84.8 | 697 | 286 | 3262 |
| Buffer Area in Hectare (ha) | 1896.73 | 2241.13 | 3790.05 | 2941.99 | 6801.82 |
| Air Temperature °C | 46.5 | 31.9 | 32.2 | 31 | 32.9 |
| Water Temperature °C | 31.7 | 30.2 | 29.5 | | 30.8 |
| Humidity % | 47 | 45 | 69 | 48 | 63 |
| Nutrients in Water | Mesotrophic | Oligotrophic | Mesotrophic | not known | Mesotrophic |
| Water pH | 9.6 | 8.2 | 8.3 | | 7.6 |
| Water TDS ppm | 197 | 1030 | 183 | | 2352 |
| Water Conductivity ppm | 321 | 1448 | 852 | | 1000 |
| Light Penetration cms | 66 | 23 | 39 | | 21 |
| Water Salinity ppt | 0.281 | 0.731 | 0.245 | | 3.116 |
| DO mg/L | 11.59 | 1.83 | 3.66 | | 3.25 |
| PO4P mg/L | 0.004 | 0.035 | 0.010 | | 0.034 |
| Water Na ppm | 26.8 | 582 | 30.5 | | 2567.5 |
| Water K ppm | 2.4 | 13.2 | 3.6 | | 52.4 |
| Water Li ppm | 0 | 0.4 | 0.1 | | 1.5 |
| Water Ca ppm | 13.3 | 105.7 | 27.1 | | 152.5 |
| Soil Colour code | 10YR 6/4 | 10YR 6/8 | 10YR 4/3 | 10YR 7/1 | 10YR 6/2 |
| Soil Colour | Light Yellowish Brown | Brownish Yellow | Brown | Light Gray | Light Brownish Gray |
| Soil pH | 7.58 | 7.57 | 7.27 | 7.95 | 7.31 |
| Soil TDS ppm | 105 | 273 | 287 | 191 | 2.22 |
| Soil Conductivity ppm | 147.9 | 384 | 405 | 268 | 3140 |
| Soil Salinity ppt | 0.073 | 0.186 | 0.195 | 0.131 | 1.63 |
| Soil Na ppm | 5.5 | 46.3 | 22.1 | 24.9 | 442 |
| Soil K ppm | 2.5 | 3.2 | 7.1 | 3.4 | 27.5 |
| Soil Li ppm | 0 | 0.1 | 0.1 | 0.1 | 0.4 |
| Soil Ca ppm | 10 | 16.8 | 23.8 | 16.3 | 78 |

**Kaliveli Lake**

**Lake Survey Number**: not provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Kaliveli Lake (Plate 77).

1.2 Villages that surround the wetland include Erimedu, Sevadin kuppam, Cheiyan Kuppam, Kalayan kuppam, Aathikuppam, Vandipalayam, Kottikuppam, Pudhupakkam.

1.3 & 1.4 The lake is based in Villipuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 06'12.7" N; 12° 06'27.5" N; 12° 06'34.2" N; 12° 06'57.1" N; and Longitude: 079° 53'22.5" E; 079° 53'07.0" E; 079° 52'57.7" E; 079° 52'34.2" E;

1.6 The wetland is a Protected Area as a wetland of National Importance by the MoEF&CC.

1.7 The wetland comes under the jurisdiction of Tamil Nadu Forest Department.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 3262 hectares (Map 32.2).

2.2 The Wetland type - the wetland belongs to the Natural (coastal lagoon) category in the sub category permandnt wetland.

2.3 Based on the secondary information the average depth is 1.0 meters for the wetland.

2.4 The elevation of the wetland is 2 to 6 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Bay of Bengal.

b) The water in the wetland is mostly of Permandnt nature.

c) The water also helps in replenishingthe groundwater.

d) The pH of the water was observed to be alkaline and recorded form 7.4 to 7.6.

e) The lake has fresh water with the salinity recorded at 3.116 ppt at the time of sampling.

f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation. Moreover the wetland receives large quantities of sewage and effluents and is rich in nutrients.

2.6 Climatic setting

a) Rainfall for the month of February in Villupuram was 0.0 mm.

b) The atmospheric temperature varied between 31.7 and 32.9°C and the humidity was form 54 to 63 %.

2.7 The area of zone of influence is 6801.82 hectares with a fixed buffer area of 2 kms around the wetland (Map 32.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0%; | Grassland/Scrubland 5%; |
| Agriculture 95%; | Settlement (Rural) 0%; |
| Settlement (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2003 and 2017 is given in Map 32.2 & 32.3.

**Section III- Biodiversity**

3.1 List of Plant species: 33 species of plants were recorded around the wetland during our visit (Table 32.3).

3.2 List of animal species: 108 animal species including 4 domestic species were recorded during the survey (Table 32.4a-h).

3.3 Species of Conservation importance: Two near Threatened species of birds were observed during the survey (Table 32.4a-h).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, and *Ipomoea sp.*formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around the wetland and the ground water is used for irrigation.

4.3 Fishery is undertaken without any permitions in the lake, recreational fishery is also practiced and is under the forest department control.

4.4 The wetland is not used for any aquatic food cultivation

4.5 The plants around the wetland are not used for any medicinal purpose.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.7 It is a major source of ground water recharge.

4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.9 The wetland has several temples and other religious institutions along its bank, except for recreation no other cultural activity is organized around the wetland.

4.10 The site is only majorly used by the fishers only.

4.11 There are no agriculture or plantation activities within the wetland.

4.12 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.13 The wetland supports a vast diversity of fishery.

4.14 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken.

5.2 There is no agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is no withdrawal of water for agriculture as thewater is saline.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.

6.3 There is no organized fishing activity, though a fishing community exist.

**Section VII Notification Category**

The wetland is included as wetland of National Importance under the MOEF&CC and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed and the desiltation of the feeder chandl should be undertaken to revive the wetland.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Kaliveli Lake


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Table 32.3: List of Plant species recorded along the Kaliveli Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 7 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 8 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 9 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 10 | *Sesuvium portulacastrum* | Sea pursland,Shore pursland | Vankaravacci | Aizoaceae | Native | NA |
| 11 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 12 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 13 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 14 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 15 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 16 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 17 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 18 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 19 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 20 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 21 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 22 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 23 | *Alternanthera ficoidea* | Calico Plant | | Amaranthaceae | Introduced | |
| 24 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 25 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 26 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 27 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, | Commelinaceae | Native | LC |
| 28 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 29 | *Bulbostylis barbata* | Water Garss | | Cyperaceae | Native | NA |
| 30 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |
| 31 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 32 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 33 | *Eragrostis gangetica* | Slimflower Lovegrass | | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.4a: List of Insect species recorded along the Kaliveli Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 8 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 32.4b: List of Butterfly species recorded along the Kaliveli Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Common Jezebel | *Delias eucharis* | Pierinae | Common |
| 6 | Common Cerulean | *Jamides celeno* | Polyommatinae | Common |
| 7 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |

| | | | | |
|---|---|---|---|---|
| 8 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 9 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 10 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 32.4c: List of Odonate species recorded along the Kaliveli Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |

Table 32.4d: List of Arachnida species recorded along the Kaliveli Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 32.4e: List of Fishes recorded form the Kaliveli Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 6 | *Macrognathus pancalus* | Spiny eel | Aaraa meen | Mastacembelidae | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 9 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 10 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 11 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 12 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 13 | *Puntius dorsalis* | Long snouted barb | Sal kendai | Cyprinidae | LC |
| 14 | *Sardinella albella* | White sardinella | Choodai | Clupeidae | LC |
| 15 | *Stolephorus commersonii* | Commerson's anchovy | Nethili | Engraulidae | NE |
| 16 | *Hyporhamphus dussumieri* | Dussumier's halfbeak | Mural | Hemiramphidae | NE |
| 17 | *Notopterus notopterus* | Featherback | Chotta vaalai meen | Notopteridae | LC |
| 18 | *Rastrelliger kanagurta* | Indian mackerel | Kanangeluthi | Scombridae | DD |
| 19 | *Argyrops spinifer* | King soldier bream | Punanthalai | Sparidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.4f: List of Reptile species recorded along the Kaliveli Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 32.4g: List of Bird species recorded along the Kaliveli Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 2 | Northern Shoveler | *Anas clypeata* | Anatidae | Least Concern |
| 3 | Northern Pintail | *Anas acuta* | Anatidae | Least Concern |
| 4 | Gargandy | *Anas querquedula* | Anatidae | Least Concern |
| 5 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 6 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |

| | | | | |
|---|---|---|---|---|
| 7 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 8 | Greater Flaminngo | *Phoenicopterus roseus* | Phoenicopteridae | Least Concern |
| 9 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 10 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 11 | Eurasian Spoonbill | *Platalea leucorodia* | Threskiornithidae | Least Concern |
| 12 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 13 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 14 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |
| 15 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 16 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 17 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 18 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 19 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 20 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 21 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 22 | Indian Cormorant | *Phalacrocorax fusicollis* | Phalacrocoracidae | Least Concern |
| 23 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 24 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 25 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 26 | Kentish Plover | *Charadrius alexandrinus* | Charadriidae | Least Concern |
| 27 | Common Redshank | *Tringa totanus* | Scolopacidae | Least Concern |
| 28 | Marsh Sandpiper | *Tringa stagnatilis* | Scolopacidae | Least Concern |
| 29 | Common Greenshank | *Tringa nebularia* | Scolopacidae | Least Concern |
| 30 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 31 | Wood Sandpiper | *Tringa glareola* | Scolopacidae | Least Concern |
| 32 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 33 | Little Stint | *Calidris minuta* | Scolopacidae | Least Concern |
| 34 | Dunlin | *Calidris alpina* | Scolopacidae | Least Concern |
| 35 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 36 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 37 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 38 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 39 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 40 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 41 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 42 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 43 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 44 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 45 | Ashy-crowned Sparrow-lark | *Eremopterix griseus* | Alaudidae | Least Concern |
| 46 | Oriental skylark | *Alauda gulgula* | Alaudidae | Least Concern |
| 47 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 48 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 49 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 50 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 51 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 52 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 53 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 54 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 55 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

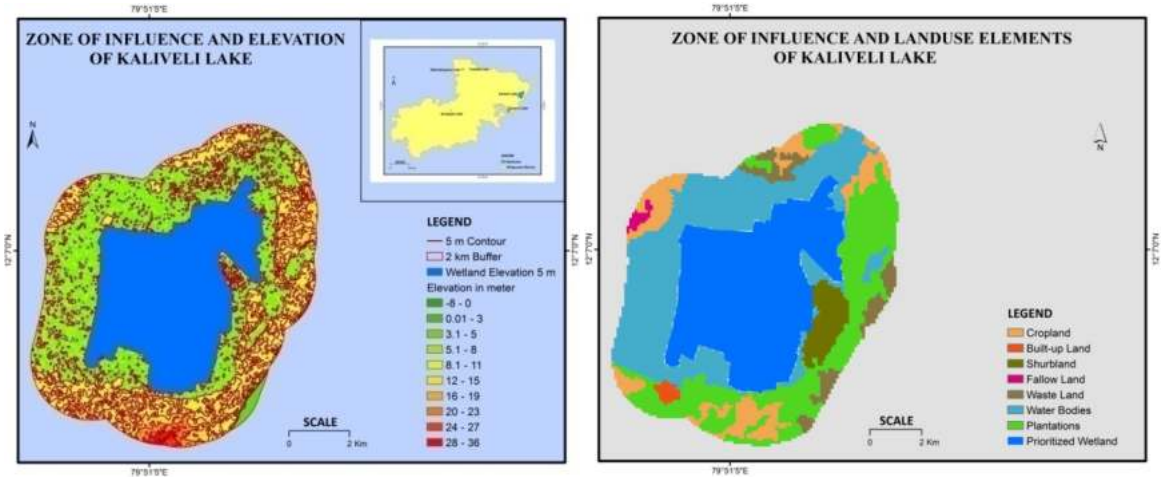
Table 32.4h: List of Mammals recorded along the Kaliveli Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 32.2: Comparative Google imagery for Kaliveli Lake**




**Map 32.3: The zone of influence around the Kaliveli lake.**



**Melmalayanur Lake**

**Lake Survey Number: 24/1**

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as MelmalayanurLake (Plate 77) it is also known as Easa eri.

1.2 Villages that surround the wetland include Malmaliayanur and Thayanur.

1.3 & 1.4 The lake is based in Tirukovilur taluka in Villupuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 20'21.0" N; 12° 20'21.9" N; 12° 20'26.8" N; 12° 20'29.0" N; and Longitude: 079° 19'18.5" E; 079° 19'15.0" E; 079° 19'14.7" E; 079° 19'13.0" E;`

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Villupuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 286 hectares (Map 32.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 2 to 3 meters for the wetland.

2.4 The elevation of the wetland is 124 to 129 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and Thayanur River.

b) The water in the wetland is intermitent nature with some water is present only for six to seven months, as the wetland is mostly dependant on the rainfall and runoff waters.

c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields and Sankaraparani River.

d) The pH of the water was not done as the wetland was dry during our visit.

e) The lake has fresh water as per the secondary information, the salinity recorded was not done as the wetland was dry during our visit.

f) The wetland had *Ipomoea, Prosopis, Parthenium, Lantana, Acasia* and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of August, 2018 in Villupuram was 0.0 mm.

b) The atmospheric temperature was 31.0 °C and the humidity was 48 %.

2.7 The area of zone of influence is 2941.13 hectares with a fixed buffer area of 2 kms around the wetland (Map 32.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0 %; | Grasslands/scrublands 0%; |
| Agricultural lands 75%; | Settlements (Rural) 25%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2011 and 2018 is given in Map 32.4 & 32.5.

**Section III- Biodiversity**

3.1 List of Plant species: 25 species of plants were recorded around the wetland during our visit (Table 32.5).

3.2 List of animal species: 21 animal species including 3 domestic species were recorded during the survey (Table 32.6a-f).

3.3 Species of Conservation importance: No Threatened species of birds and fishes were observed during the survey (Table 32.6a-f).
3.4 Major Plant invasive alien species and extent of invasion: Six invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The Village Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 There are farmlands where agriculture is undertaken around the wetland using both wetland and borewell water.
4.3 Fishery is undertaken when water is present.
4.4 The wetland is not used for any aquatic food cultivation
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any other purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing throught the wetland.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There solid waste dumping activities within the wetland.
4.13 The wetland provides a suitable habitat for aquatic and terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.
4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken around the wetlands
5.3 Grazing by the cattle is undertaken.
5.4 There is withdrawal of water for agriculture or fishery purpose.
5.5 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment and solid waste dumping including medical waste.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Melmalyanuresa eri

Table32.5: List of Plant species recorded along the Melmalayanur Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 2 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 3 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 4 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 5 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 6 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 7 | *Citrullus colocynthis* | Bitter Apple, Colocynth, Bitter cucumber, Egusi, Vine of Sodom | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 8 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 9 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 10 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 11 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 12 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 13 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 14 | *Datura stramonium* | Common Thorn apple | Oomathai | Solanaceae | Native | NA |
| 15 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 16 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 17 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 18 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 19 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 20 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, Adutinnathalai | Commelinaceae | Native | LC |
| 21 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 22 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 23 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 24 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 25 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.6a: List of Insect species recorded along the Melmalayanur Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 2 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 32.6b: List of Butterfly species recorded along the Melmalayanur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 2 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 32.6c: List of Odonata species recorded along the Melmalayanur Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 2 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 3 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 32.6d: List of Reptile species recorded along the Melmalayanur Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 32.6e: List of Bird species recorded along the Melmalayanur Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Yellow-wattled Lapwing | *Vandllus malabaricus* | Charadriidae | Least Concern |
| 2 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 3 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 4 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 5 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 6 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 7 | Red-rumped Swallow | *Cecropis daurica* | Hirundinidae | Least Concern |
| 8 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |

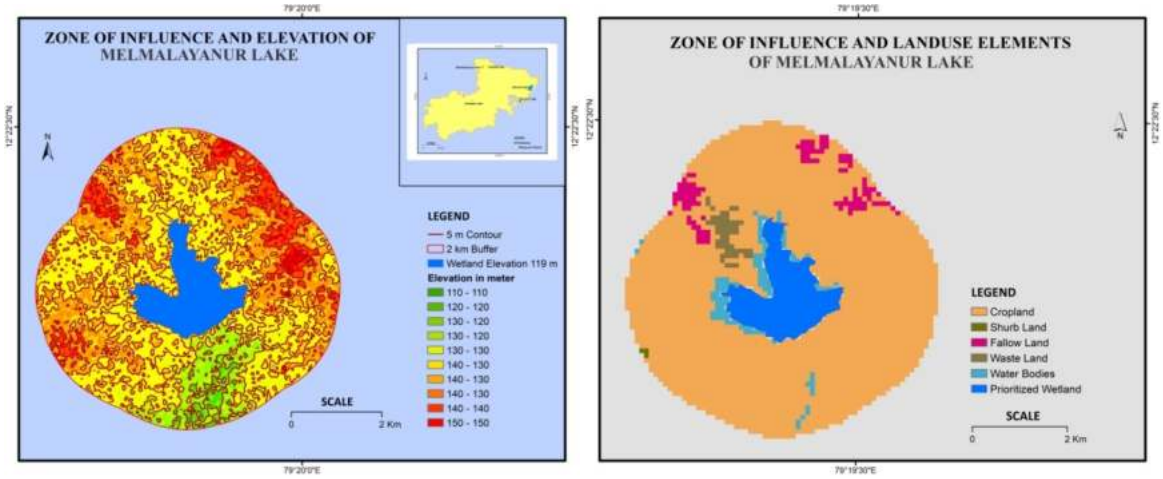
Table 32.6f: List of Mammal species recorded along the Melmalayanur Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 32.4: Comparative google imagery for Melmalayanur Lake**




**Map 32.5: Zone of Influence around the Melmalayanur Lake**



**Ousteri Lake**

**Lake Survey Number**: Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Oosteri Lake and Oosudu lake (Plate 78).

1.2 Villages that surround the wetland include Perambai, pazhayappattampalayam, Nadupalayam, Poothurai, Kondimedu, Manali, Kasipalayam and Kataperikuppam.

1.3 & 1.4 The lake is based in Villipuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 56'53.3" N; 11° 56'45.8" N; and Longitude: 079° 45'26.1" E; 079° 45'20.0" E;

1.6 The wetland is not a Protected area but comes under the jurisdiction of Pondicherry and Tamil Nadu.

1.7 The wetland comes under the jurisdiction of Tamil Nadu Forest Department.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 697 hectares (Map 32.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category seasonal intermittent wetland.

2.3 Based on the secondary information the average depth is 3.0 meters for the wetland.

2.4 The elevation of the wetland is 18 to 19 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, groundwater, the surrounding runoff form the catchment area and form the Sathnur dam River canal system.
b) The water in the wetland is mostly of intermittent in nature.
c) The water also helps in the replenishing the groundwater.
d) The pH of the water was observed to be alkaline and recorded form 7.4 to 8.3.
e) The lake has fresh water with the salinity recorded at 0.245 ppt at the time of sampling.
f) The wetland was observed to be closer to Mesotrophic as the wetland was observed to have maximum floating, submergent and emergent vegetation. Moreover the wetland receives large quantities of sewage and effluents and is rich in nutrients.

2.6 Climatic setting

a) Rainfall for the month of February in Villupuram was 0.0 mm.
b) The atmospheric temperature varied between 29.0 and 32.2°C and the humidity was form 65 to 69 %.

2.7 The area of zone of influence is 3790.05 hectares with a fixed buffer area of 2 kms around the wetland (Map 32.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0; | Grassland/scrubland 10%; |
| Agriculture 80%; | Settlement (Rural) 10%; |
| Settlement (Urban) 0%; | Industries 0% |

2.9. The comparison of the wetland for the years 2005 and 2017 is given in Map 32.5 & 32.7.

**Section III- Biodiversity**

3.1 List of Plant species: 39 species of plants were recorded around the wetland during our visit (Table 32.7).

3.2 List of animal species: 75 animal species including 2 domestic species were recorded during the survey (Table 32.8a-h).

3.3 Species of Conservation importance: Two near Threatened species of birds and nine threatened fish species were observed during the survey (Table 32.8a-h).

3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.* formed nearly 50 % of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: Tilapia is a very common invasive species that was recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose.

4.2 Agriculture is undertaken around and within the wetland and the ground water is used for irrigation.

4.3 Fishery is undertaken with permitions of PWD in the lake, recreational fishery is also practiced.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.7 It is a major source of ground water recharge.

4.8 There is significant runoff form the surrounding catchment area and the wetland acts as a sink for sediments. The locals have informed of the reduction in the depth of the wetland over a period of time.

4.9 The wetland has several temples and other religious institutions along its bank, except for recreation and cultural activity is organized around the wetland.

4.10 The site is only majorly used by the fishers and agriculture community.

4.11 There is agriculture or plantation activities within the wetland.

4.12 The wetland provides a suitable habitat for birds as we also recorded the local and migratory bird species during our survey.

4.13 The wetland supports a vast diversity of fishery.

4.14 There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 Community fishing is undertaken.

5.2 There is agriculture undertaken within the wetland.

5.3 Agriculture is undertaken around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture.

5.6 The wetland is used for bathing by livestock.

**Section VI Present and potential threats**

6.1 The wetland does not show major change in the pattern of water inflow and outflow.

6.2 The pollution in the form of sewage, effluents and solidwaste dumping is seen but it is low threat in its present condition.

6.3 There is no organized fishing activity; recreational fishing is a common activity.

**Section VII Notification Category**

The wetland is not included under any conservation program and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a major threat form reclamation and encroachment, solid waste dumping although it is observed around the wetland.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

The encroachment of the wetland has to be immediately addressed.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

Literature available for Ousteri Lake


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Table 32.7: List of Plant species recorded along the Ousteri Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Nymphaea odorata* | Meghalaya Red Water Lily | | Nymphaeaceae | Native | LC |
| 2 | *Capparis zeylanica* | Ceylon caper | Adondai, Konkani | Capparaceae | Native | NA |
| 3 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 4 | *Polygala arvensis* | Field Milkwort | Milakunankai | Polygalaceae | Native | NA |
| 5 | *Corchorus aestuans* | East Indian Mallow, Jute, | | Malvaceae | Native | |
| 6 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 7 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 8 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 9 | *Cissus quadrangularis* | Devil's Backbone | Pirandai | Vitaceae | Native | NA |
| 10 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 11 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 12 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 13 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 14 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 15 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 16 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 17 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 18 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 19 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, | Asteraceae | Native | NA |
| 20 | *Cascabela thevetia* | Mexican oleander | | Apocynaceae | Exotic | NA |
| 21 | *Argyreia sericea* | Silky Morning Glory | Kanvalipoo | Convolvulaceae | Native | NA |
| 22 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 23 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 24 | *Hygrophila schulli* | Marsh Barbel | Neermulli | Acanthaceae | Native | LC |
| 25 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 26 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 27 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 28 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 29 | *Amaranthus viridis* | Green Amaranth | Kuppakkeerai | Amaranthaceae | Exotic | NA |
| 30 | *Celosia argentea* | Plumed cockscomb, | Makilikkeerai, | Amaranthaceae | Native | NA |
| 31 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 32 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 33 | *Breynia vitis-idaea* | Mountain Coffee Bush | | Phyllanthaceae | Native | NA |
| 34 | *Commelina benghalensis* | Bengal Dayflower | Adutinnathalai | Commelinaceae | Native | LC |
| 35 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 36 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 37 | *Aristida setacea* | Wiregrass | Thudaippam | Poaceae | Native | NA |
| 38 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 39 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.8a: List of Insect species recorded along the Ousteri Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 4 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 5 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 6 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 7 | Black Ant | *Myrmicaria brunnea* | Formicidae |
| 8 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 32.8b: List of Butterfly species recorded along the Ousteri Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 4 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 5 | Forget-Me-Not | *Catochrysops strabo* | Polyommatinae | Common |
| 6 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 7 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 8 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 9 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 10 | Peacock Pansy | *Junonia almana* | Nymphalinae | Common |
| 11 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 32.8c: List of Odonate species recorded along the Ousteri Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Senegal Golden Dartlet | *Ischnura senegalensis* | Coenagrionidae | Common |
| 2 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 32.8d: List of Arachnida species recorded along the Kaliveli Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 32.8e: List of fish recorded form the Ousteri Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 7 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 8 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 9 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 10 | *Catla catla* | Caltla | Korakendai, Catla | Cyprinidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |
| 13 | *Anabas testudineus* | Climbing erch | Panangottai meen, Payonerikendai meen | Anabantidae | DD |
| 14 | *Lepidocephalichthys thermalis* | Spiny loach | Ira meen, Ayirai meen | Cobitidae | LC |
| 15 | *Mystus gulio* | Long whiskers catfish | Uppang-keluththi | Bagridae | LC |
| 16 | *Elops machnata* | Tenpounder | Ulaththimeen | Elopidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.8f: List of Reptiles recorded along the Ousteri Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

Table 32.8g: List of Bird species recorded along the Ousteri Lake

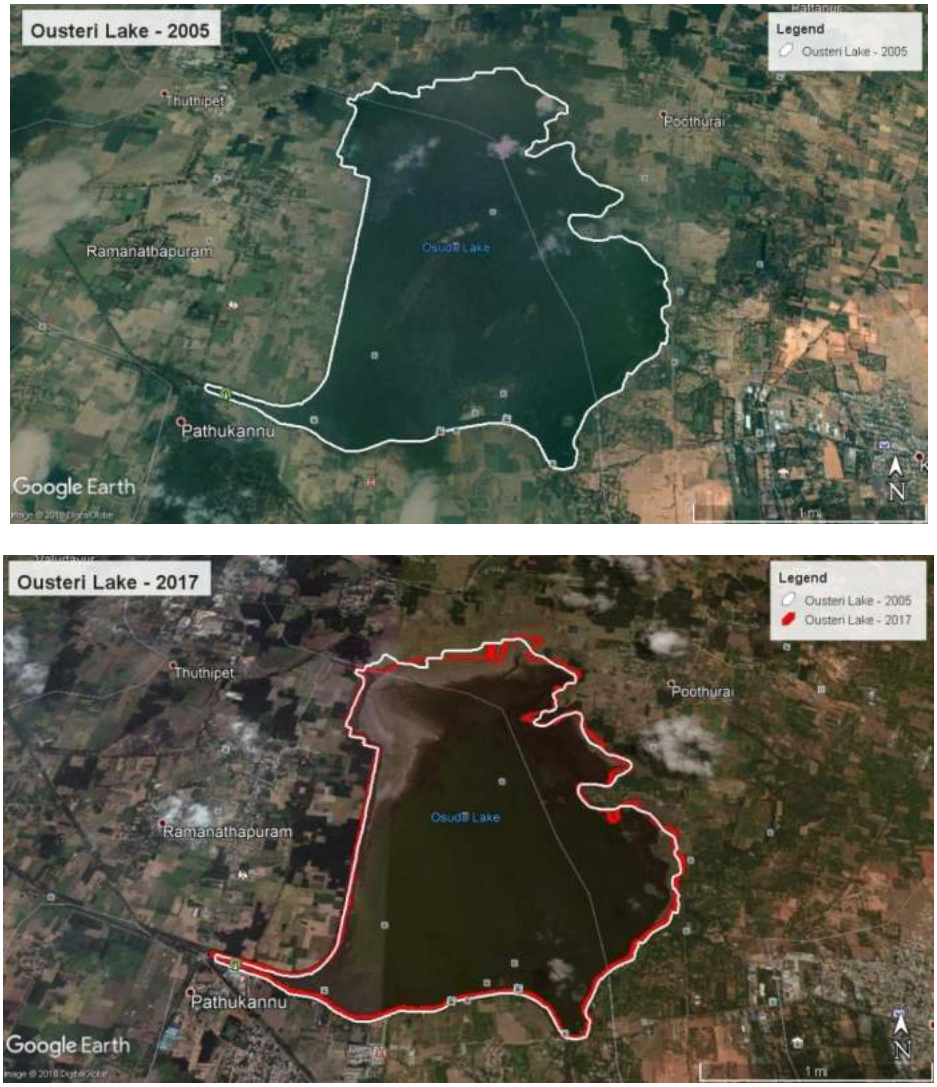
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | Purple Heron | *Ardea purpurea* | Ardeidae | Least Concern |

| | | | | |
|---|---|---|---|---|
| 4 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 5 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 6 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 7 | Darter | *Anhinga melanogaster* | Anhingidae | Near Threatened |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 10 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 11 | Whiskered Tern | *Chlidonias hybrida* | Laridae | Least Concern |
| 12 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 13 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 14 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 15 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 16 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 17 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 18 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 19 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 20 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 21 | Plain Prinia | *Prinia inornata* | Cisticolidae | Least Concern |
| 22 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 23 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 24 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 25 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 26 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 27 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |
| 28 | Purple Sunbird | *Cinnyris asiaticus* | Nectariniidae | Least Concern |

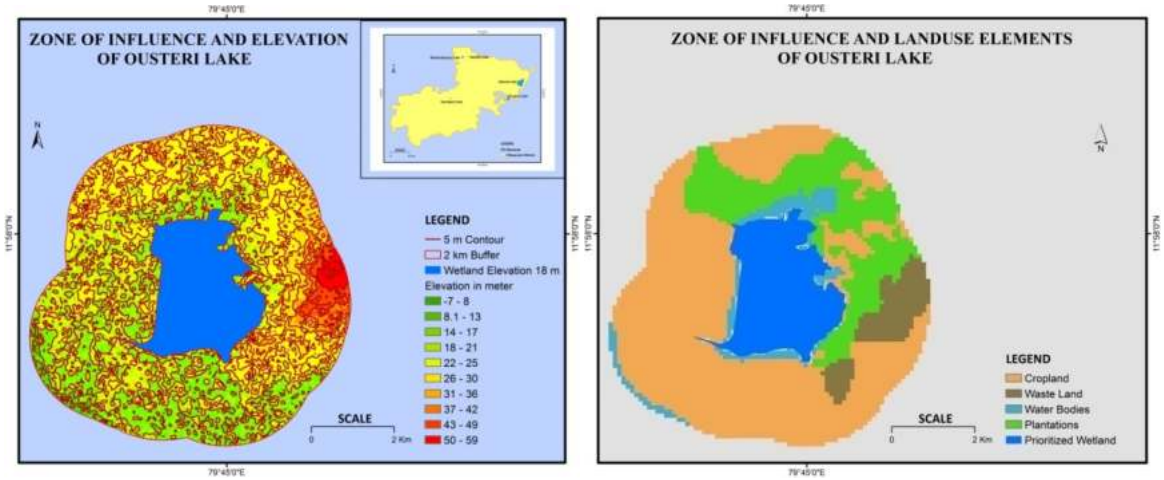
Table 32.8h: List of Mammals recorded along the Ousteri Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 2 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 3 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 32.6:Comparative Google imagery for Ousteri Lake**




**Map 32.7: The zone of influence around the Ousteri lake.**



**ValathyLake**

**Lake Survey Number:** Not Provided

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Valathy Lake (Plate 78).

1.2 Villages that surround the wetland include Valathy, Eriporadai, Muruganthangal.

1.3 & 1.4 The lake is based in Villupuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 12° 20'49.7" N; 12° 20'56.2" N; 12° 21'06.7" N; 12° 21'12.3" N; 12° 21'14.3" N; and Longitude: 079° 22'09.9" E; 079° 22'11.0" E; 079° 22'13.4" E; 079° 22'12.6" E; 079° 22'13.5" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Villupuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 53.6 hectares (Map 32.8).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 3.5 meters for the wetland.

2.4 The elevation of the wetland is 114 to 118 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area.

b) The water in the wetland is intermitent nature with some water is present only for a six to eight months, as the wetland is mostly dependant on the rainfall and runoff waters.

c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.

d) The pH of the water was 9.6.

e) The lake has fresh water as as the salinity recorded was 0.281 ppt.

f) The wetland had *Ipomoea, Prosopis, Lantana* and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of February, 2018 in Villupuram was 0.0 mm.

b) The atmospheric temperature was 46.5 and the humidity was 47 %

2.7 The area of zone of influence is 1896.73 hectares with a fixed buffer area of 2 kms around the wetland (Map 32.9).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0 %; | Grasslands/scrublands 10%; |
| Agricultural lands 80%; | Settlements (Rural) 10%; |
| Settlements (Urban) 10%; | Industries 0% |

2.9 The comparison of the wetland for the years 2011 and 2017 is given in Map 32.8 & 32.9.

**Section III- Biodiversity**

3.1 List of Plant species: 42 species of plants were recorded around the wetland during our visit (Table 32.9).

3.2 List of animal species: 99 animal species including 4 domestic species were recorded during the survey (Table 32.10a-i).

3.3 Species of Conservation importance: Two Threatened species of birds and fishes were observed during the survey (Table 32.10a-i).

3.4 Major Plant invasive alien species and extent of invasion: Nine invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The Village Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.
4.2 There are farmlands where agriculture is undertaken around the wetland using both wetland and borewell water.
4.3 Fishery is undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any other purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area.
4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing throught the wetland.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are agriculture or plantation activities within the wetland.
4.13 The wetland provides a suitable habitat for aquatic and terrestrial birds as we also recorded few bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.
4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 There is agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture or fishery purpose.
5.6 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.
6.2 The wetland has been facing drought condition for the past 5 years.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to eb regulated. These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Valathy Lake**

There is no published scientific literature for the wetland.

Table 32.9. List of Plant species recorded along the Valathy Lake

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Tinospora cordifolia* | Heart-leaved moonseed | Shindilakodi | Menispermaceae | Native | NA |
| 2 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Corchorus aestuans* | East Indian Mallow, Jute, West African mallow | | Malvaceae | Native | |
| 5 | *Sida acuta* | Common Wireweed | Palambasi | Malvaceae | Native | NA |
| 6 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 7 | *Abrus precatorius* | crab's eye,Jequirity | Gundumani, Kundhumani | Fabaceae | Native | NA |
| 8 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 9 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 10 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 11 | *Citrullus colocynthis* | Bitter Apple, Bitter cucumber, Egusi, | kumatti, pey-komatti | Cucurbitaceae | Native | |
| 12 | *Corallocarpus epigaeus* | Red fruit creeper | | Cucurbitaceae | Native | NA |
| 13 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 14 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 15 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 16 | *Morinda coreia* | Indian Mulberry, Morinda | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 17 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 18 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 19 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 20 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 21 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 22 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 23 | *Solanum nigrum* | Black nightshade, | Manathakkali | Solanaceae | Native | NA |
| 24 | *Martynia annua* | Devil's Claws | Thaelkodukkudai, | Martyniaceae | Native | NA |
| 25 | *Barleria strigosa* | Barleria terminalis | Nilamparam | Acanthaceae | Native | NA |
| 26 | *Lantana camara* | Lantana | Kuruvichedi | Verbenaceae | Invasive | NA |
| 27 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 28 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 29 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 30 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 31 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 32 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 33 | *Jatropha glandulifera* | Glandular Jatropha | Vellaikattukottai | Euphorbiaceae | Native | NA |
| 34 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 35 | *Commelina benghalensis* | Bengal Dayflower | Kanangkozai, | Commelinaceae | Native | LC |
| 36 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 37 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 38 | *Brachiaria mutica* | Para Grass | | Poaceae | Invasive | LC |
| 39 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 40 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 41 | *Saccharum spontandum* | Kans grass | Pekkarimpu | Poaceae | Native | LC |
| 42 | *Chloris barbata* | Swollen Finger Grass | Chevvarakupul | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.10a: List of Insect species recorded along the Valathy Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 4 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 5 | Small Dung Beetle | *Onthophagus sp.* | Scarabaeidae |
| 6 | Blue Banded Honeybee | *Amegilla cingulata* | Apidae |
| 7 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 8 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 9 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 10 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 11 | Pharaoh Ant | *Monomorium pharaonis* | Formicidae |

Table 32.10b: List of Diplopoda species recorded along the Valathy Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Millipede | *Spinotarsus colosseus* | Odonotopgidae |

Table 32.10c: List of Butterfly species recorded along the Valathy Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 5 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 6 | Small Orange Tip | *Colotis etrida* | Pierinae | Common |
| 7 | Yellow Orange Tip | *Ixias pyrene* | Pierinae | Common |
| 8 | Common Gull | *Cepora nerissa* | Pierinae | Common |
| 9 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 10 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 11 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 12 | Blue Tiger | *Tirumala limniace* | Danainae | Common |
| 13 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 14 | Common Evening Brown | *Melanitis leda* | Satyrinae | Common |
| 15 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 16 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |
| 17 | Chocolate Pansy | *Junonia iphita* | Nymphalinae | Common |
| 18 | Lemon Pansy | *Junonia lemonias* | Nymphalinae | Common |

Table 32.10d: List of Odonata species recorded along the Valathy Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Golden Dartlet | *Ischnura aurora* | Coenagrionidae | Common |
| 2 | Blue Dart | *Pseudagrion microcephalum* | Coenagrionidae | Common |
| 3 | Three Lined Dart | *Pseudagrion decorum* | Coenagrionidae | Common |
| 4 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 5 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 6 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 7 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 8 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 9 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 10 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 11 | Common Picture Wing | *Rhyothemis variegata* | Libellulidae | Common |
| 12 | Red Marsh Trotter | *Tramea basilaris* | Libellulidae | Common |
| 13 | Black Marsh Trotter | *Tramea limbata* | Libellulidae | Common |
| 14 | Long-Legged Marsh Glider | *Trithemis pallidinervis* | Libellulidae | Common |
| 15 | Taeniolate Marsh Hawk | *Orthetrum taeniolatum* | Libellulidae | Common |

Table 32.10e: List of Arachnida species recorded along the Valathy Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 32.10f: List of fish species recorded along the Valathy Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Ctenopharyngodon idella* | Grass Carp | Pullukendai, Kendai | Cyprinidae | NA |
| 3 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 4 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 5 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 6 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 7 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 8 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |
| 10 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |
| 11 | *Cirrhinus mrigala* | Mrigal carp | Mirgal meen | Cyprinidae | LC |
| 12 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.10g: List of Reptile species recorded along the Valathy Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

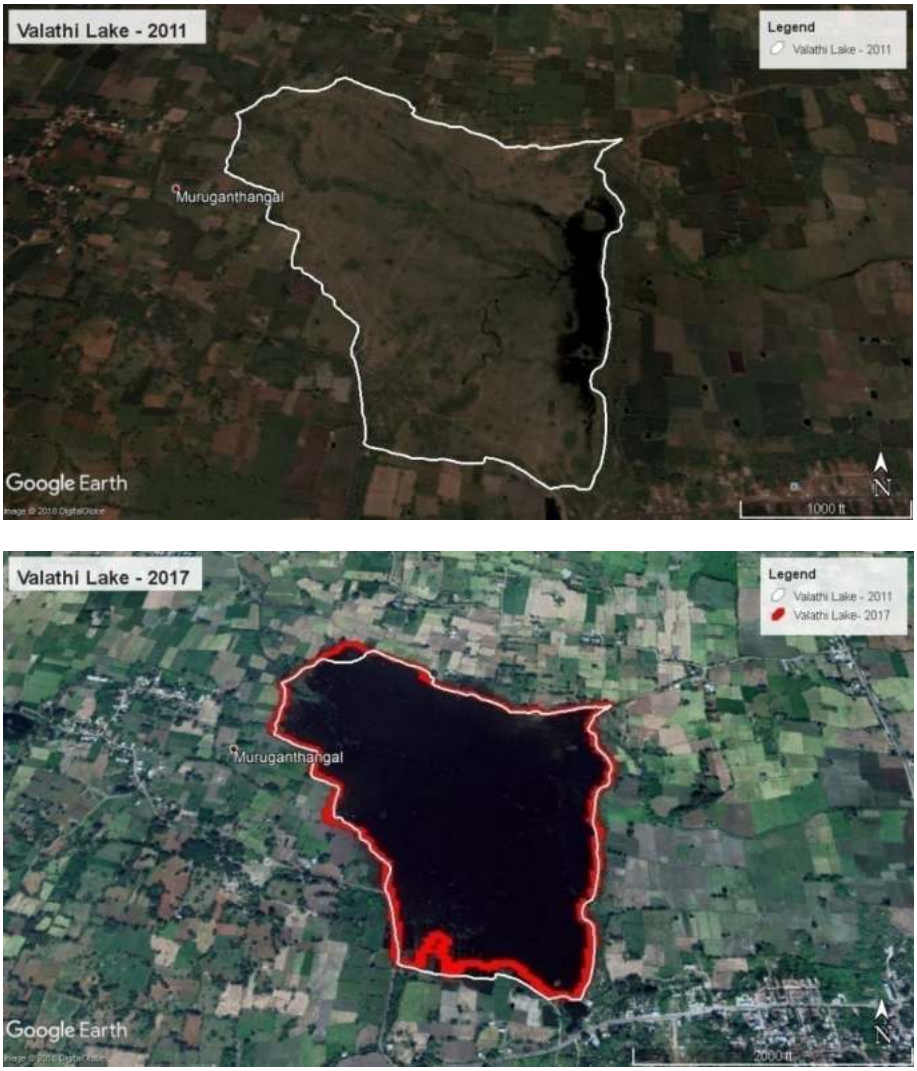
Table 32.10h: List of Bird species recorded along the Valathy Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Gargandy | *Anas querquedula* | Anatidae | Least Concern |
| 2 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 7 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 8 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 9 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 12 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 13 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 14 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 15 | Southern Coucal | *Centropus (sinensis) parroti* | Cuculidae | Least Concern |
| 16 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 17 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 18 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 19 | Common Kingfisher | *Alcedo atthis* | Alcedinidae | Least Concern |
| 20 | Blue-tailed Bee eater | *Merops philippinus* | Meropidae | Least Concern |
| 21 | Brown Shrike | *Lanius cristatus* | Laniidae | Least Concern |
| 22 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 23 | Indian Golden Oriole | *Oriolus kundoo* | Oriolidae | Least Concern |
| 24 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 25 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 26 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 27 | Common Tailorbird | *Orthotomus sutorius* | Cisticolidae | Least Concern |
| 28 | Blyth's Reed Warbler | *Acrocephalus dumetorum* | Acrocephalidae | Least Concern |
| 29 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 30 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 31 | Rosy Starling | *Pastor roseus* | Sturnidae | Least Concern |
| 32 | Oriental Magpie Robin | *Copsychus saularis* | Muscicapidae | Least Concern |
| 33 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

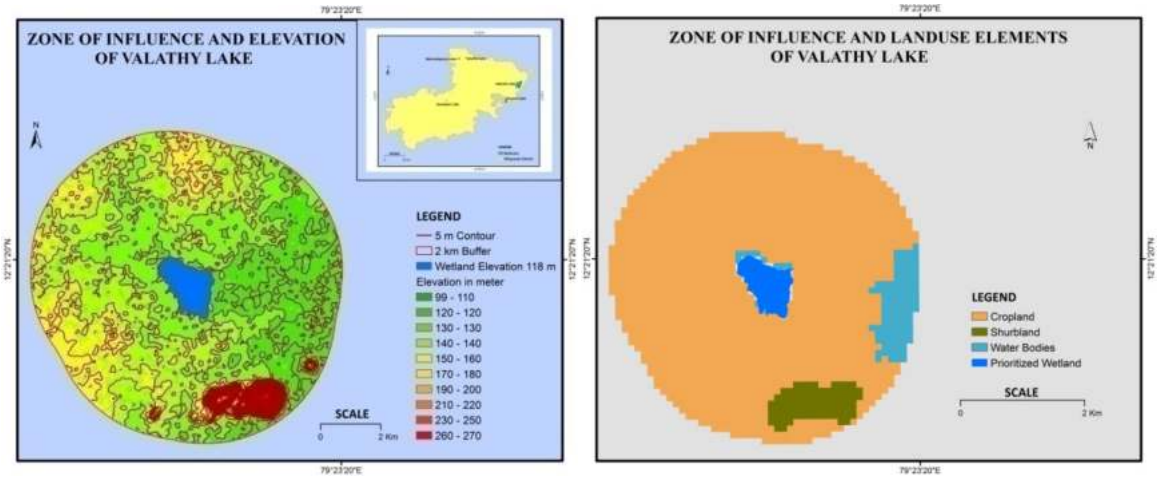
Table 32.10i: List of Mammals recorded along the Valathy Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 32.8: Comparative Google imagery for Valathy Lake**




**Map 32.9: The zone of influence around the Valathy lake.**



**Sandapet Lake**

**Lake Survey Number:** 599/1, 500/1a

**Section I: Identification, Location and Jurisdiction**

1.1 Commonly known as Tirukovilur Periya eri (Plate 79) or Sandapeth eri.

1.2 Villages that surround the wetland include Sandapeth and Tirukovilur.

1.3 & 1.4 The lake is based in Tirukovilur taluka in Villupuram District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 11° 57'46.2" N; 11° 57'49.1" N; 11° 57'45.6" N; 11° 57'42.6" N; 11° 57'31.0" N; and Longitude: 079° 11'48.4" E; 079° 11'56.7" E; 079° 11'55.5" E; 079° 12'00.6" E; 079° 12'05.4" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Villupuram division.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 84.8 hectares (Map 32.10).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 3 to 4 meters for the wetland.

2.4 The elevation of the wetland is 100 to 114 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and sathnur dam.

b) The water in the wetland is intermitent nature with some water is present only for a eight to ten months, as the wetland is mostly dependant on the rainfall and runoff waters.

c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields and kaccha eri.

d) The pH of the water was 8.2.

e) The lake has fresh water as as the salinity recorded was 731 ppt.

f) The wetland had the aquatic vegetation like *Ipomoea, Prosopis, Parthenium, Lantana* and other weeds that dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of August, 2018 in Villupuram was 0.0 mm.

b) The atmospheric temperature was 31.9 C and the humidity was 55 %.

2.7 The area of zone of influence is 2241.13 hectares with a fixed buffer area of 2 kms around the wetland (Map 32.11).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forest 0 %; | Grasslands/scrublands 5%; |
| Agricultural lands 20%; | Settlements (Rural) 75%; |
| Settlements (Urban) 0%; | Industries 0% |

2.9 The comparison of the wetland for the years 2010 and 2018 is given in Map 32.10 & 32.11.

**Section III- Biodiversity**

3.1 List of Plant species: 43 species of plants were recorded around the wetland during our visit (Table 32.11).

3.2 List of animal species: 50 animal species including 4 domestic species were recorded during the survey (Table 32.12a-i).

3.3 Species of Conservation importance: No Threatened species of birds and fishes were observed during the survey (Table 32.12a-i).

3.4 Major Plant invasive alien species and extent of invasion: Eight invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The Village Panchayat provides drinking water form the borewell water at regular intervals that is used by the locals to fulfill their daily requirements.

4.2 There are farmlands where agriculture is undertaken around the wetland using both wetland and borewell water.

4.3 Fishery is undertaken.

4.4 The wetland is not used for any aquatic food cultivation.

4.5 The plants around the wetland are not used for any medicinal purpose.

4.6 The wetland is not used for any other purpose but serves as a ground water recharge as long as the water is present.

4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.

4.8 It is a major source of ground water recharge.

4.9 There is runoff form the surrounding area.

4.10 The wetland has a few temples along its bank and major cultural and religious activities are performed in the wetland when water is present. There is high tension wires passing throught the wetland.

4.11 The site is majorly used by the locals for grazing their cattle and goats.

4.12 There are duck farming activities within the wetland.

4.13 The wetland provides a suitable habitat for aquatic and terrestrial birds as we also recorded few bird species during our survey.

4.14 The wetland supports local fish species when water is present and there is no commercial fishery.

4.15 Around the wetland we observed encroachment and excessive solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken.

5.2 There is agriculture undertaken around the wetland.

5.3 There is agriculture around the wetland.

5.4 Grazing by the cattle is undertaken.

5.5 There is withdrawal of water for agriculture or fishery purpose.

5.6 The locals are well aware of the importance of the wetland.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment and solid waste dumping including medical waste.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character, solid waste dumping.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to eb regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for**

Devika Rani (Mar. 20, 2016) ebird Checklist. (ebird.org/hotspot/L4083846?yr=all&m=&rank=mrec)

Siva T. (Oct. 30, 2016) ebird Checklist. (ebird.org/hotspot/L4083846?yr=all&m=&rank=mrec)

Table 32.11: List of Plant species recorded along the Sandapet Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 3 | *Sida cordifolia* | Heart leaf sida | | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Azadirachta indica* | Neem tree | Veppamaram | Meliaceae | Native | NA |
| 6 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 7 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 8 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 9 | *Caesalpinia pulcherrima* | Peacock Flower, Pride of Barbados, Dwarf poinciana | Mayurkonrai | Fabaceae | Native | |
| 10 | *Leucaena leucocephala* | Wild Tamarind | Kattupullimaram | Fabaceae | Invasive | NA |
| 11 | *Pithecellobium dulce* | Manilla Tamarind | Kodukkappuli | Fabaceae | Exotic | NA |
| 12 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 13 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 14 | *Senna tora* | Stinking Cassia, Chinese senna, Foetid cassia,Java bean, | Senavu | Fabaceae | Native | NA |
| 15 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 16 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 17 | *Vachellia planiforns* | Umbrella Thorn | Karivellam | Fabaceae | Native | NA |
| 18 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 19 | *Cucumis sativus* | Cucumber | Vellarikkay | Cucurbitaceae | Native | NA |
| 20 | *Cucurbita pepo* | Pumpkin, Field pumpkin | Poosani | Cucurbitaceae | Native | NA |
| 21 | *Luffa acutangula* | Ribbed Sponge Gourd | Peyppirkam, Akacaveni | Cucurbitaceae | Native | NA |
| 22 | *Morinda coreia* | Indian Mulberry, Morinda tree | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 23 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 24 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 25 | *Marsdenia volubilis* | Sneeze Wort, Cotton milk plant | Kotippalai | Apocynaceae | Native | NA |
| 26 | *Oxystelma esculentum* | Rosy Milkweed Vine | | Apocynaceae | Native | LC |
| 27 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 28 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 29 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 30 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 31 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 32 | *Solanum nigrum* | Black nightshade,Blackberry nightshade,Nightshade, | Manathakkali | Solanaceae | Native | NA |
| 33 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 34 | *Justicia tranquebariensis* | Tarangambadi Justicia | Punnaku Poodu, Mutaliyar, | Acanthaceae | Native | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 35 | *Leucas aspera* | Common Leucas | Thumbai | Lamiaceae | Native | NA |
| 36 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 37 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 38 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 39 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 40 | *Ricinus communis* | Castor Oil | Aamanakku | Euphorbiaceae | Native | NA |
| 41 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 42 | *Phoenix sylvestris* | Wild Date Palm | Enthupaanai, Echam plum | Arecaceae | Native | NA |
| 43 | *Cyperus eleusinoides* | Flatsedge | --- | Cyperaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.12a: List of Insect species recorded along the Sandapet Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Blister Beetle | *Hycleus sp.* | Meloidae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 32.12b: List of Butterfly species recorded along the Sandapet Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Crimson Rose | *Pachliopta hector* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 5 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 6 | Common Leopard | *Phalanta phalantha* | Heliconiinae | Common |

Table 32.12c: List of Odonate species recorded along the Sandapet Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 2 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 32.12d: List of Arachnida species recorded along the Sandapet Lake

| S.No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Wolf Spider | *Pardosa sp.* | Lycosidae |

Table 32.12e: List of Fish species recorded along the Sandapet Lake

| S. No | *Scientific Name* | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 3 | *Etroplus suratensis* | Green chromide | Karimeen, Sethameen | Cichlidae | LC |
| 4 | *Labeo rohita* | Rohu | Rohu, Kannadikendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 32.12f: List of Amphibian species recorded along the Sandapet Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | LC |
| 2 | Indian Pond Forg | *Euphlyctis hexadactylus* | Dicroglossidae | LC |

Table 32.12g: List of Reptile species recorded along the Sandapet Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 32.12h: List of Bird species recorded along the Sandapet Lake

| S.No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 3 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 4 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 5 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 6 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 7 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 8 | Asian Koel | *Eudynamys scolopaceus* | Cuculidae | Least Concern |
| 9 | Little Swift | *Apus affinia* | Apodidae | Least Concern |
| 10 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 11 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 12 | Pied Kingfisher | *Ceryle rudis* | Alcedinidae | Least Concern |
| 13 | Green Bee-eater | *Merops orientalis* | Meropidae | Least Concern |
| 14 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 15 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 16 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 17 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 18 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 19 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 20 | Purple-rumped Sunbird | *Leptocoma zeylonica* | Nectariniidae | Least Concern |

Table 32.12i: List of Mammal species recorded along the Sandapet Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

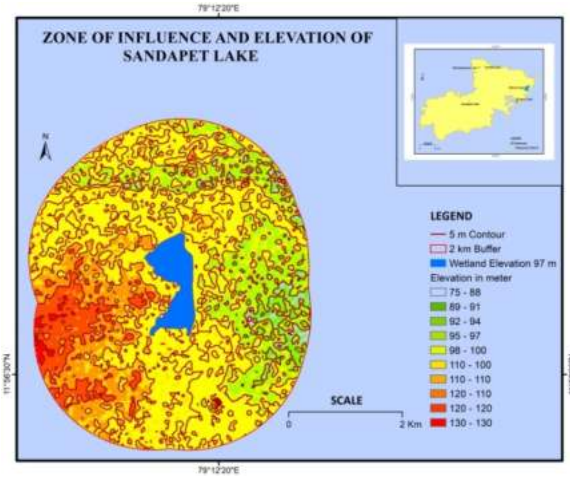
**Map 32.10: Comparative google imagery for Sandapet Lake**

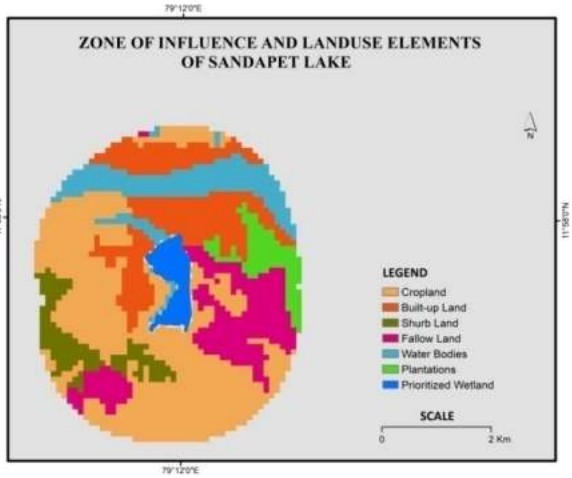






**Map 32.11: Zone of influence around the Sandapet Lake**



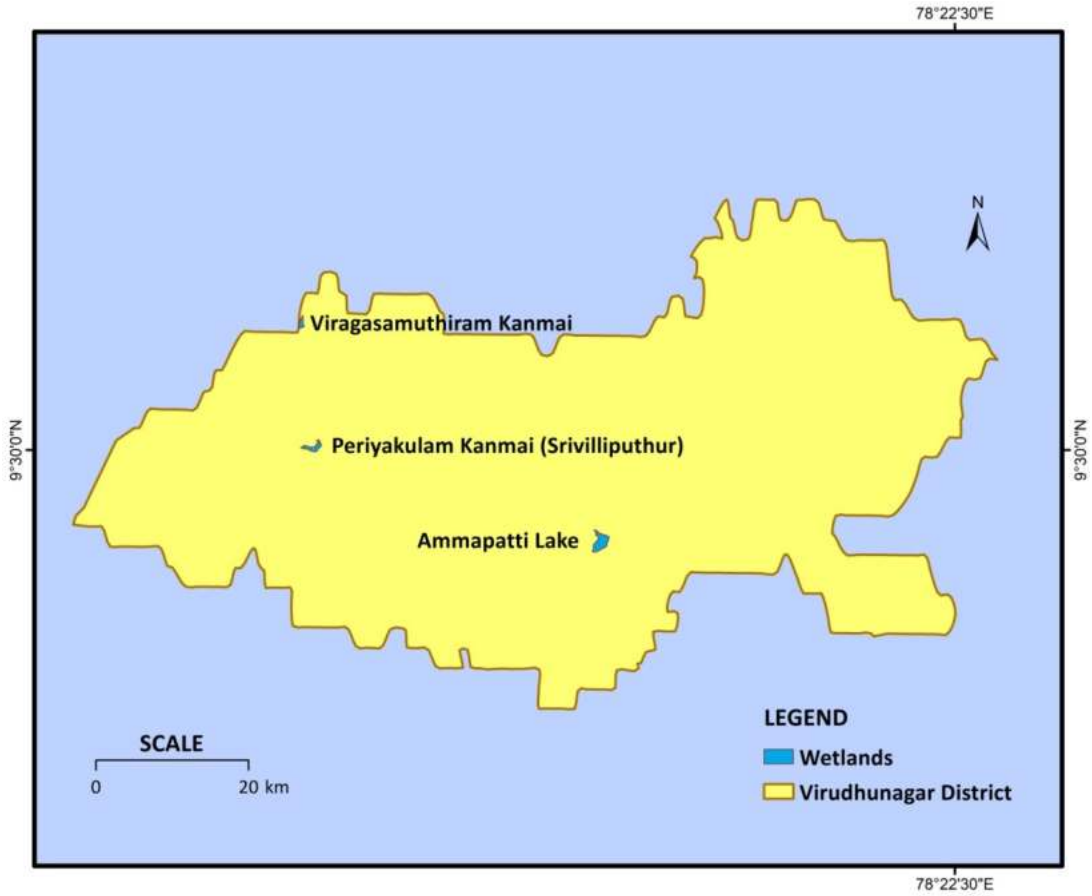
## 33. Virudhunagar District

### 1. Introduction

Virudhunagar District is famous for its temples and food, was formerly called Karmavirer Kamarajar District. Virudhunagar district was formed by the separation of Old Ramanathapuram District in 1987 into Ramanathapuram District, Sivagangai District and the west part as Virudhunagar District. The term Virudhu means award in Tamil. The district is bounded by Sivagangai district and Madurai district on the north, Tirunelveli district and Tuticorin District to the south and Ramanathapuram District on east and Kerala state to the west and Theni district to the northwest.

Total geographic area of Virudhunagar is 4232 km². Total area under wetland is 29071 ha, which includes 590 small wetland (<2.25 ha). Lakes/Ponds occupy 47.79% of wetland area. The second major wetland type is Tanks/Ponds. There are 738 Tanks/Ponds with 8889 ha area (30.58%).

For the present study we identified three wetlands based on the satelite imagery and the size of the wetland (Map 33.1)




**Map 33.1: Wetlands of Virudhunagar district assessed for Prioritization**

### Observations

Of the three wetlands selected in the district, Ammapatti is the largest while Periyakulam Kanmai is the smallest of the three wetlands. Around the three wetlands, we recorded 92 plant species both aquatic and terrestrial including

18invasive species (Table 33.1). The faunal components totaled 105species with the representation of 48 bird species including the wetland birds. The field study revealed that Viragasamuthiram Kanmai was Oligotrophic while the other two were mesotrophic in status (Table 33.2). The water quality was comparatively better in Ammapattilake than the other two wetlands. The soil is regularly hydrated annually and hence it also forms a sink for the pollutants form the water.

The wetlands were observed to provide the ecosystem services like water for agriculture, ground water recharge, fish habitat, recreation at the local level, habitat for the aquatic and associated life forms in addition to the cultural religious services to the surrounding villages. The threats observed were increasing growth of invasive species the maximum were recorded form Ammapattilake. Mining of lake sediments was a major threat to all the three wetlands in addition to the release of sewage that influences the character of the wetland.

Based on the parameters we assessed, the community interactions and the fact that the wetlands are only seasonally recharged the wetlands, the wetlands are prioritized in the following order for conservation:

1. Periyakulam Kanmai (Srivilliputhur)
2. Viragasamuthiram Kanmai
3. Ammapatti Lake

Table 33.1: The flora and fauna recorded form the wetlands of Virudhunagar District

| S. No | Name of the Wetland | Plants (Invasives | Other Arthropods | Odonata | Lepidoptera | Arachnida | Fishes | Amphibians | Reptiles | Birds | Mammals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ammapatti Lake | 51(14) | 12 | 3 | 11 | 2 | 9 | 0 | 2 | 28 | 5 |
| 2 | Periyakulam Kanmai (Srivilliputhur) | 34(7) | 4 | 8 | 5 | 0 | 0 | 1 | 1 | 27 | 3 |
| 3 | Viragasamuthiram Kanmai | 50(10) | 7 | 5 | 3 | 1 | 6 | 1 | 1 | 21 | 5 |
| | | 92(18) | 15 | 8 | 13 | 2 | 10 | 1 | 2 | 48 | 6 |

Table 33.2: The water and soil quality assessed form the wetlands of Virudhunagar District

| District Name | Virudhunagar | | |
|---|---|---|---|
| Wetland Name | Ammapatti | Periyakulam Kanmai (Srivilliputhur) | Viragasamuthiram Kanmai |
| Wetland area (ha) | 336 | 66.7 | 148 |
| Buffer Area in Hectare (ha) | 2919.96 | 2663.95 | 2087.28 |
| Air Temperature °C | 31.4 | 37.1 | 30 |
| Water Temperature °C | 28.5 | 30.7 | 27.6 |
| Humidity % | 43 | 29 | 53 |
| Nutrients in Water | Mesotrophic | Mesotrophic | Oligotrophic |
| Water pH | 7.6 | 8.38 | 9.6 |
| Water TDS ppm | 184 | 211 | 721 |
| Water Conductivity ppm | 387 | 300 | 1020 |
| Light Penetration cms | 25 | 39 | 3 |
| Water Salinity ppt | 0.102 | 1.54 | 0.5 |
| DO mg/L | 9.35 | 8.94 | 10.57 |
| PO4P mg/L | 0.017 | 0.003 | 0.345 |
| Water Na ppm | 32.4 | 598 | 2010 |
| Water K ppm | 4.07 | 45.5 | 16.9 |
| Water Li ppm | 0 | 0.6 | 0.7 |
| Water Ca ppm | 11.9 | 105.3 | 85.5 |
| Soil Colour code | 7.5YR 4/3 | 10YR 5/4 | 10YR 5/6 |
| Soil Colour | Brown | Yellowish Brown | Yellowish Brown |
| Soil pH | 7.41 | 7.7 | 7.25 |
| Soil TDS ppm | 132 | 325 | 296 |
| Soil Conductivity ppm | 186.4 | 458 | 419 |
| Soil Salinity ppt | 0.091 | 0.221 | 0.2 |
| Soil Na ppm | 9 | 22.4 | 38.9 |
| Soil K ppm | 5.7 | 28.2 | 12.4 |
| Soil Li ppm | 0 | 0.2 | 0.1 |
| Soil Ca ppm | 8.3 | 29.8 | 21.6 |

**Ammapatti Lake**

**Lake Survey Number:** 236 & 7.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Ammapatty Kanmai (Plate 80).

1.2 Villages that surround the wetland include Ammapatty, Kumarareddypuram, Rukkumingi, Ramalingapuram.

1.3 & 1.4 The lake is based in Viruddhanagar District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 24'04.9" N; 09° 22'29.7" N; 9° 22'32.7" N; 9° 22'40.2" N; and Longitude: 077° 57'35.9" E; 077° 57'10.8" E; 077° 57'14.0" E; 077° 57'18.2" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of village panchayat of Ammapatty, Viruddhanagar.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 336 hectares (Map 33.2).

2.2 The Wetland type - the wetland belongs to the Man made (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 2.5 meters for the wetland.

2.4 The elevation of the wetland is 69 to 72 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and the overflow of Kolvarpatti Dam.

b) The water in the wetland is intermitent nature, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the wetland had very little water.

c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.

d) The pH of the water was 7.6.

e) The lake has fresh water as the salinity was 0.102 ppt.

f) The wetland was completely dry and the aquatic vegetation like *Ipomoea* and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Viruddhanagar was 28.5 mm.

b) The atmospheric temperature was 31.4 °C and the humidity was form 41 to 43 %

2.7 The area of zone of influence is 2919.96 hectares with a fixed buffer area of 2 kms around the wetland (Map 33.3).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forests 0%; | Grasslands/ scrubland 10%; |
| Agricultural lands 80 %; | Settlements (rural) 10%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2007 and 2017 is given in Map 33.2 & 33.3.

**Section III- Biodiversity**

3.1 List of Plant species: 46 species of plants were recorded around the wetland during our visit (Table 33.3).

3.2 List of animal species: 72 animal species including 4 domestic species were recorded during the survey (Table 33.4a-g).

3.3 Species of Conservation importance: Threatened species of birds were not observed during the survey (Table 33.4a-g).

3.4 Major Plant invasive alien species and extent of invasion: 14 invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded. Although there are introduced common carps in the lake the extent of their invasion is not documented and needs a detailed study.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The municipal corporation provides drinking water form the Kollvarpatty dam water at regular intervals and the bore well that is used by the locals to fulfill their daily requirements.
4.2 There are large number of farmlands where agriculture is undertaken around the wetland using borewell water.
4.3 Fishery is not undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area during the monsoon season.
4.10 The wetland has a temple along its bank and major cultural and religious activities are performed in the wetland when water is present.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few migratory bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.
4.15 Around the wetland we observed encroachment and solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 There is very significant amount of agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture or fishery purpose.
5.6 The wetland has some quantity of water decause of the proximity of the dam.
5.7 The locals are well aware of the importance of the wetland and do try not to pollute it.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

**Literature available for Ammapatti Lake**

There is no literature available for the lake.

Table 33.3. List of Plant species recorded along the Ammapatti Lake

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | Category |
|---|---|---|---|---|---|---|
| 1 | *Argemone mexicana* | Mexican Prickly Poppy | Kudiyotti | Papaveraceae | Invasive | NA |
| 2 | *Abelmoschus moschatus* | Musk Mallow | Kasturi vendaikkayvirai, | Malvaceae | Native | NA |
| 3 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 4 | *Sida cordata* | Long-stock Sida | Kurunthotti | Malvaceae | Native | NA |
| 5 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 6 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 7 | *Mimosa pudica* | Touch Me Not | Thottaal Chinungi | Fabaceae | Native | LC |
| 8 | *Pongamia pinnata* | Pongam Tree | Pungai | Fabaceae | Native | LC |
| 9 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 10 | *Senna auriculata* | Tanner's Cassia | Avaram | Fabaceae | Native | NA |
| 11 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 12 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 13 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 14 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 15 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 16 | *Chromolaena odorata* | Siam Weed | | Asteraceae | Invasive | NA |
| 17 | *Eclipta alba* | False Daisy | | Asteraceae | Native | LC |
| 18 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 19 | *Tridax procumbens* | Tridax Daisy | Vettukkaayathalai | Asteraceae | Invasive | NA |
| 20 | *Xanthium strumarium* | Common Cocklebur | Marulumattai | Asteraceae | Native | NA |
| 21 | *Madhuca longifolia var. latifolia* | South Indian Mahua | Illuppai, Katillipi | Sapotaceae | Native | NA |
| 22 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 23 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 24 | *Heliotropium indicum* | Indian Heliotrope | Thelkodukku Chedi | Heliotropiaceae | Native | NA |
| 25 | *Hewittia malabarica* | Clustered Morning Glory | Onaankodi, Onan Kodi | Convolvulaceae | Invasive | NA |
| 26 | *Ipomoea campanulata* | Tambar vel | | Convolvulaceae | Invasive | NA |
| 27 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 28 | *Merremia emarginata* | Kidney leaf morning glory | Elikkadhu keerai | Convolvulaceae | Native | LC |
| 29 | *Datura metel* | Datura metel | Devil's Trumpet | Solanaceae | Invasive | NA |
| 30 | *Solanum virginianum* | Thorny Nightshade | Kandankatthiri | Solanaceae | Native | NA |
| 31 | *Barleria acuminata* | Long-flower Barleria | Vellai Kurinji | Acanthaceae | Native | NA |
| 32 | *Dicliptera paniculata* | Wedge-Leaf Foldwing | Karungurundhu | Acanthaceae | Native | NA |
| 33 | *Leucas urticifolia* | Irula , Kannuthumabai | | Lamiaceae | Native | NA |
| 34 | *Mirabilis jalapa* | Four O'Clock, | Andhi Mandarai | Nyctaginaceae | Naturalized | NA |
| 35 | *Alternanthera pungens* | Khaki Weed | Seppunerungi | Amaranthaceae | Invasive | NA |
| 36 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 37 | *Digera muricata* | False Amaranth | Toyyakkirai | Amaranthaceae | Native | NA |
| 38 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 39 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 40 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 41 | *Euphorbia hirta* | Asthma Weed | Ammam Paccharisi | Euphorbiaceae | Native | NA |
| 42 | *Jatropha curcas* | Psychic Nut | Kaattuamanakku, | Euphorbiaceae | Invasive | NA |
| 43 | *Jatropha gossypiifolia* | Bellyache Bush | Siria Amanakku | Euphorbiaceae | Native | NA |
| 44 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 45 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 46 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul | Poaceae | Native | NA |

Table 33.4a: List of Insects recorded along the Ammapatti Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Toothpick Grasshopper | *Leptysma marginicollis* | Acrididae |
| 2 | Common Field Grasshopper | *Chorthippus brunneus* | Acrididae |
| 3 | Water Strider | *Gerris sp.* | Gerridae |
| 4 | Red Cotton Stainer | *Dysdercus cingulatus* | Pyrrhocoridae |
| 5 | Jewel bug | *Chrysocoris stollii* | Scutelleridae |
| 6 | Transverse lady beetle | *Coccinella transversalis* | Coccinellidae |
| 7 | 28 Spotted Potato Ladybird | *Henosepilachna vigintioctopunctata* | Coccinellidae |
| 8 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 9 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 10 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 11 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 12 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 33.4b: List of Butterflies recorded along the Ammapatti Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Nymphalidae | Common |
| 2 | Crimson Rose | *Pachliopta hector* | Nymphalidae | Common |
| 3 | Small Grass Yellow | *Eurema brigitta* | Coliadinae | Common |
| 4 | Mottled Emigrant | *Catopsilia pyranthe* | Papilionidae | Common |
| 5 | Gram Blue | *Euchrysops cnejus* | Polyommatinae | Common |
| 6 | Pale Grass Blue | *Pseudozizeeria maha* | Polyommatinae | Common |
| 7 | Small Grass Jewel | *Freyeria putli* | Polyommatinae | Common |
| 8 | Plain Tiger | *Danaus chrysippus* | Danaidae | Common |
| 9 | Tawny Coster | *Acraea violae* | Acraeinae | Common |
| 10 | Joker | *Byblia ilithyia* | Cyrestinae | Common |
| 11 | Angled Castor | *Ariadne ariadne* | Biblidinae | Uncommon |

Table 33.4c: List of Odonata recorded along the Ammapatti Lake

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 3 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |

Table 33.4d: List of Arachnida recorded along the Ammapatti Lake

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |
| 2 | Signature Spider | *Argiope anasuja* | Arandidae |

Table 33.4e: List of fishes recorded along the Ammapatti Lake

| S. No | Scientific Name | Common Name | Local Name | Family | Category |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Hypophthalmichthys molitrix* | Silver Carp | Vella Kendai | Cyprinidae | NT |
| 3 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 4 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 5 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 6 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 7 | *Macrobrachium rosenbergii* | Giant River Prawn | Nander Iraal | Palaemonidae | LC |
| 8 | *Hyporhamphus limbatus* | Half beak | Cola meen | Hemiramphidae | LC |
| 9 | *Puntius sophore* | Pool barb, Spotfin Swamp Barb | Kulla kendai | Cyprinidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 33.4f: List of Reptiles recorded along the Ammapatti Lake

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |
| 2 | Common Skink | *Mabuya carinata* | Scincidae | Least Concern |

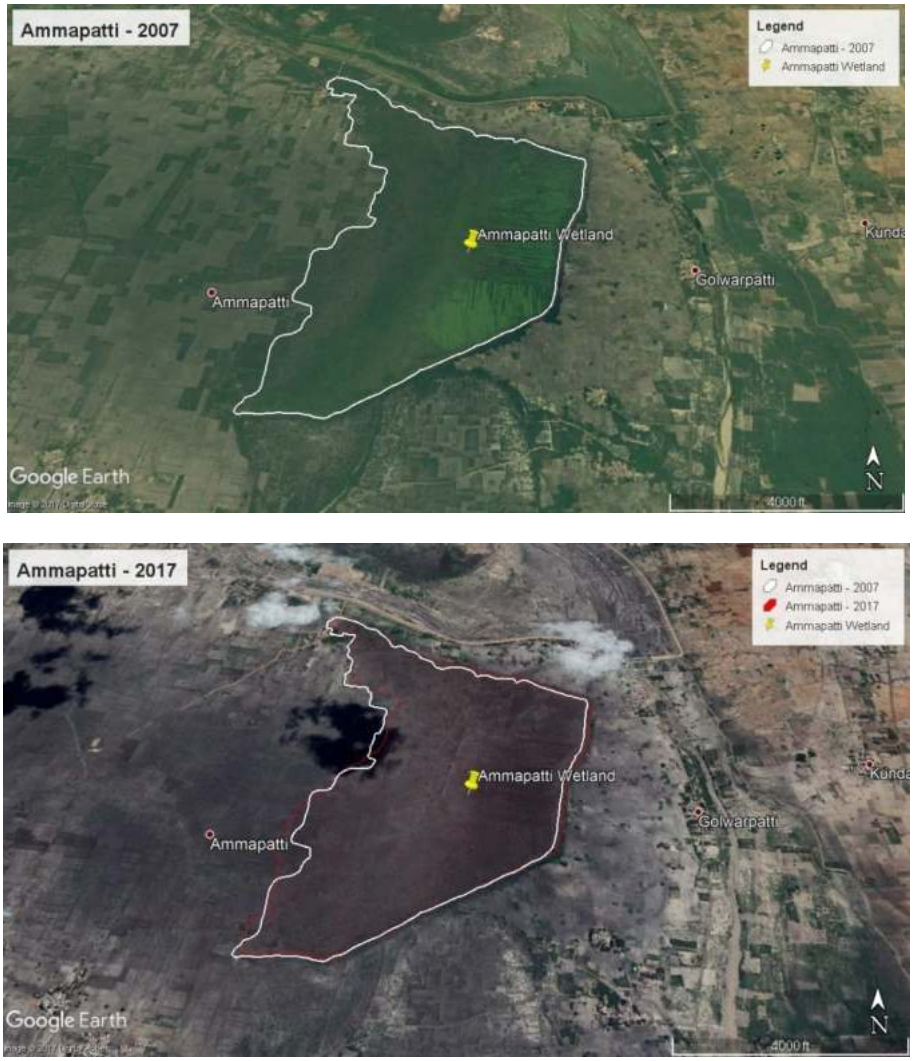
Table 33.4g: List of Birds recorded along the Ammapatti Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Indian Peafowl | *Pavo cristatus* | Phasianidae | Least Concern |
| 2 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 3 | Asian Openbill | *Anastomus oscitans* | Ciconiidae | Least Concern |
| 4 | Red-naped Ibis | *Pseudibis papillosa* | Threskiornithidae | Least Concern |
| 5 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 6 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 7 | Cattle Egret | *Bubulcus ibis* | Ardeidae | Least Concern |
| 8 | Great Egret | *Casmerodius albus* | Ardeidae | Least Concern |
| 9 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 10 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 11 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 12 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 13 | Green Sandpiper | *Tringa ochropus* | Scolopacidae | Least Concern |
| 14 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 15 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 16 | Rose-ringed Parakeet | *Psittacula krameri* | Psittacidae | Least Concern |
| 17 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 18 | Little Swift | *Apus affinis* | Apodidae | Least Concern |
| 19 | Indian Roller | *Coracias benghalensis* | Coraciidae | Least Concern |
| 20 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 21 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 22 | Indian Jungle Crow | *Corvus (macrorhynchos) culminatus* | Corvidae | Least Concern |
| 23 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 24 | Barn Swallow | *Hirundo rustica* | Hirundinidae | Least Concern |
| 25 | Red-rumped Swallow | *Cecropis daurica* | Hirundinidae | Least Concern |
| 26 | Yellow-billed Babbler | *Turdoides affinis* | Timaliinae | Least Concern |
| 27 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 28 | Indian Robin | *Saxicoloides fulicatus* | Muscicapidae | Least Concern |

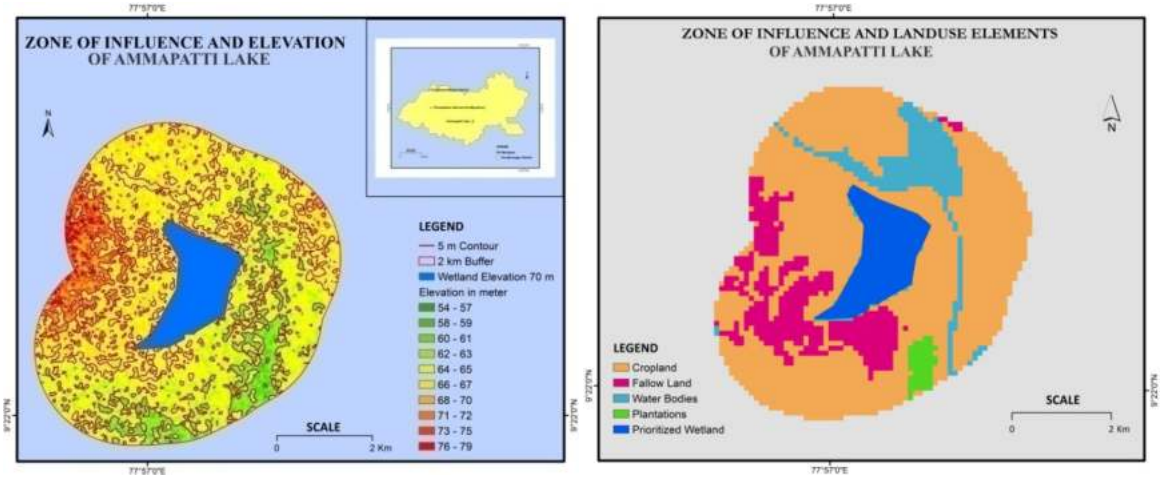
Table 33.4g: List of Mammals recorded along the Ammapatti Lake

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Water Buffalo | *Bubalus bubalis* | Bovidae | Domestic |
| 5 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |

**Map 33.2: Comparative Google imagery for Ammapatti Lake**




**Map 33.3: The zone of influence around the Ammapatti Lake**



**Viragsamuthiram kanmai**

**Lake Survey Number:** 1469-A, 1469 -B.

**Section I; Identification, Location and Jurisdiction**

1.1 Commonly known as Periyakulam Kanmai (Plate 80) other name is Viragsamuthiram.

1.2 Villages that surround the wetland include Koomapatti and Viragsamuthiram.

1.3 & 1.4 The lake is based in Srivilipudur taluka in Viruddhanagar District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 38'47.2" N; 09° 38'40.6" N; 9° 38'39.4" N; 9° 38'42.4" N and Longitude: 077° 36'30.8" E; 077° 36'33.3" E; 077° 36'34.6" E; 077° 36'31.8" E

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Tamil Nadu government.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the wetland area as 66.7 hectares (Map 33.4).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes. (This is a Complex wetland)

2.3 Based on the secondary information the average depth is 1 to 2 meters for the wetland.

2.4 The elevation of the wetland is 168 to 176 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area. Small stream form the Palavakkal Dam.

b) The water in the wetland is intermitent nature, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the wetland had little to no water.

c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.

d) The pH of the water was 9.6.

e) The lake has fresh water and the salinity recorded was 0.5 ppt.

f) The wetland was completely dry in many areas and the vegetation like *Ipomoea aquatica, Eichornea crassipes, Parthenium hysteropherous and Prosopis Juliflora* other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Viruddhanagar was 28.5 mm.

b) The atmospheric temperature was 37.1 °C and the humidity was 29 %.

2.7 The area of zone of influence is 2087.28 hectares with a fixed buffer area of 2 kms around the wetland (Map 33.5).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forests 0%; | Grasslands/ scrubland 0%; |
| Agricultural lands 80 %; | Settlements (rural) 20%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9 The comparison of the wetland for the years 2012 and 2018is given in Map 33.4 & 33.5.

**Section III- Biodiversity**

3.1 List of Plant species: 48 species of plants were recorded around the wetland during our visit (Table 33.5).

3.2 List of animal species: 50 animal species including 3 domestic species were recorded during the survey (Table 33.6a-i).

3.3 Species of Conservation importance : Two Threatened species of birds were observed during the survey (Table 33.6a-i).

3.4 Major Plant invasive alien species and extent of invasion: Ten Invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora*, *Eichornea crassipes* and *Ipomoea sp.*formed nearly major of the vegetation cover.
3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The municipal corporation provides drinking water form the bore well that is used by the locals to fulfill their daily requirements.
4.2 The farmlands where agriculture is undertaken around the wetland also use borewell water.
4.3 Fishery is undertaken in the presence of water and the PWD issues tender.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area during the monsoon season and is interconnected to the surrounding wetlands.
4.10 The wetland has a number of temples the Karupurayan temple is on its bank and major cultural and religious activities are performed in the wetland when water is present.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There is minimal agriculture activities undertaken within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial and wetland birds as we also recorded few migratory bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery on a regular basis.
4.15 Around the wetland we observed encroachment and solid waste dumping. There is regular mining for sand or silt undertaken with the permission of the municipality.

**Section V Pre-existing rights and privileges**

5.1 The fishing is undertaken when water is available.
5.2 There is agriculture undertaken within the wetland.
5.3 There is significant amount of agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture purpose.
5.6 The wetland has some quantity of water because of the recent rains.
5.7 The locals are well aware of the importance of the wetland and are unaware for its conservation.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.
6.2 Sand mining is a potential threat for the future.
6.3 The sewage water is a major concern to the wetland.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m of Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character. The soil mining that is undertaken legally should be prohibited if possible.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no Literature available for Viragsamuthiram kanmai.

Table 33.5: List of plants recorded along the Viragsamuthiram Kanmai

| S. No | Scientific Name | Common English Name | Local Tamil Name | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abelmoschus angulosus* | --- | Kattu Semparuthi | Malvaceae | Native | NA |
| 3 | *Abutilon hirtum* | Indian Mallow | Thutthikaai | Malvaceae | Native | NA |
| 4 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 5 | *Ziziphus oenopolia* | Jackal Jujube | Suraimullu | Rhamnaceae | Native | LC |
| 6 | *Cardiospermum halicacabum* | Balloon Vine | Kottavan | Sapindaceae | Native | NA |
| 7 | *Albizia lebbeck* | Siris Tree, Women's tongue | Siridam | Fabaceae | Native | NA |
| 8 | *Crotalaria globosa* | Spherical Rattlepod | | Fabaceae | Native | |
| 9 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 10 | *Indigofera tinctoria* | True indigo | Hawri, Neeli | Fabaceae | Native | NA |
| 11 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 12 | *Senna occidentalis* | Coffee senna | Nattamtakarai, Payaverai | Fabaceae | Native | NA |
| 13 | *Senna tora* | Stinking Cassia, Chinese senna, Foetid cassia, | Senavu | Fabaceae | Native | NA |
| 14 | *Tamarindus indica* | Tamarind Tree | Puliyamaram | Fabaceae | Exotic | LC |
| 15 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 16 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 17 | *Ammannia baccifera* | Blistering Ammannia | Kal-l-uruvi | Lythraceae | Native | LC |
| 18 | *Passiflora foetida* | Love in a mist | Siruppunaikkali | Passifloraceae | Invasive | NA |
| 19 | *Cucumis maderaspatanus* | Madras pea pumpkin | Musumuskkai, Nagilangiai | Cucurbitaceae | Exotic | NA |
| 20 | *Trianthema portulacastrum* | Desert Horse Pursland | Sharunnai, Shavalai | Aizoaceae | Native | NA |
| 21 | *Glinus oppositifolius* | Jima | Pampantra, Thura poondu | Molluginaceae | Native | NA |
| 22 | *Morinda coreia* | Indian Mulberry, Morinda | Mannanunai, Mannanatti | Rubiaceae | Native | |
| 23 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 24 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 25 | *Xanthium strumarium* | Common Cocklebur | Marulumattai, Ottarachedi | Asteraceae | Native | NA |
| 26 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 27 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 28 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 29 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 30 | *Ipomoea carnea* | Bush Morning Glory | --- | Convolvulaceae | Invasive | NA |
| 31 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 32 | *Barleria acuminata* | Long-flower Barleria | Vellai Kurinji | Acanthaceae | Native | NA |
| 33 | *Boerhavia diffusa* | Red hogweed | Mukaratte Kirai | Nyctaginaceae | Native | NA |
| 34 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 35 | *Aerva lanata* | Mountain Knot Grass | Cirupulai | Amaranthaceae | Native | NA |
| 36 | *Alternanthera paronychioides* | Smooth Chaff Flower | | Amaranthaceae | Naturalized | NA |
| 37 | *Alternanthera sessilis* | Sessile Joyweed | Ponnanganni | Amaranthaceae | Native | LC |
| 38 | *Gomphrena serrata* | Prostrate Gomphrena | Neervadamalli | Amaranthaceae | Invasive | NA |
| 39 | *Acalypha indica* | Indian Copperleaf | Kuppaimeni, Kollipundu | Euphorbiaceae | Native | NA |
| 40 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| 41 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhandlli | Phyllanthaceae | Native | NA |
| 42 | *Ficus benghalensis* | Banyan tree | Aalamaram, Aalai | Moraceae | Native | NA |
| 43 | *Ficus religiosa* | Peepal | Arasamaram | Moraceae | Native | NA |
| 44 | *Cocos nucifera* | Coconut Tree | Thennamaram | Arecaceae | Native | NA |
| 45 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 46 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 47 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 48 | *Chloris barbata* | Swollen Finger Grass | Mayirkontaippul, Chevvarakupul | Poaceae | Native | NA |

Table 33.6a: List of Insect species recorded along the Viragsamuthiram Kanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Water Strider | *Gerris sp.* | Gerridae |
| 2 | Water Scorpion | *Laccotrephes griseus* | Nepidae |
| 3 | Whirligig Beetle | *Gyrinus sp.* | Gyrinidae |
| 4 | Arborial Bicoloured Ant | *Tetraponera rufonigra* | Formicidae |
| 5 | Golden backed Ant | *Camponotus sericeus* | Formicidae |
| 6 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |
| 7 | Potter Wasp | *Ancistrocerus sp.* | Vespidae |

Table 33.6b: List of Butterfly species recorded along the Viragsamuthiram Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Common Rose | *Pachliopta aristolochiae* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |

Table 33.6c: List of Odonate species recorded along the Viragsamuthiram Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |
| 2 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 3 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 4 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 5 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |

Table 33.6d: List of Arachnida species recorded along the Viragsamuthiram Kanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Indian Funnel Web Spider | *Agelenopsis sp.* | Agelenidae |

Table 33.6e: List of Fish species recorded along the Viragsamuthiram Kanmai

| S. No | Scientific Name | Common Name | Local Name | | Family |
|---|---|---|---|---|---|
| 1 | *Cyprinus carpio* | Common Carp | Kendai (Valarpu Kendai) | Cyprinidae | VU |
| 2 | *Oreochromis niloticus* | Tilapia, Nile Tilapia | Nei meen, Jilapi, Kari meen | Cichlidae | LC |
| 3 | *Channa striata* | Striped Snakehead, Butterfish | Viral meen | Channidae | LC |
| 4 | *Channa punctata* | Spotted snakehead | Kuravai meen | Channidae | LC |
| 5 | *Heteropneustes fossilis* | Stinging catfish | Thelli meen | Cichlida | LC |
| 6 | *Glossogobius giuris* | Tank goby | Uluvai meen | Gobiidae | LC |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 33.6f: List of Amphibian species recorded along the Viragsamuthiram Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |

Table 33.6g: List of Reptile species recorded along the Viragsamuthiram Kanmai

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

Table 33.6h: List of Bird species recorded along the Viragsamuthiram Kanmai

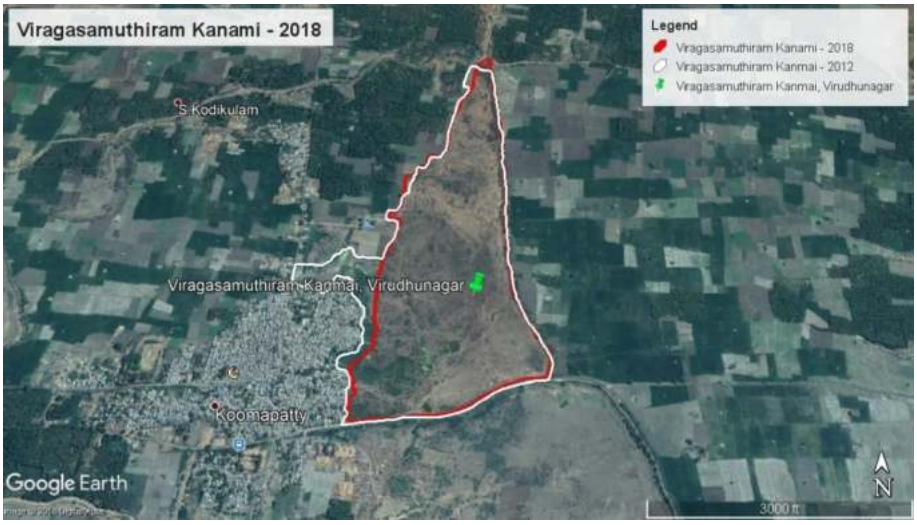
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Grey Francolin | *Francolinus pondicerianus* | Phasianidae | Least Concern |
| 2 | Indian Spot-billed Duck | *Anas poecilorhyncha* | Anatidae | Least Concern |
| 3 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 4 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 5 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Grey Heron | *Ardea cinerea* | Ardeidae | Least Concern |
| 8 | Intermediate Egret | *Mesophoyx intermedia* | Ardeidae | Least Concern |
| 9 | Little Egret | *Egretta garzetta* | Ardeidae | Least Concern |
| 10 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 11 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 12 | Common Sandpiper | *Actitis hypoleucos* | Scolopacidae | Least Concern |
| 13 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 14 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 15 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 16 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 17 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 18 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 19 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 20 | White-rumped Munia | *Lonchura striata* | Estrildidae | Least Concern |
| 21 | Paddyfield Pipit | *Anthus rufulus* | Motacillidae | Least Concern |

Table 33.6i: List of Mammal species recorded along the Viragsamuthiram Kanmai

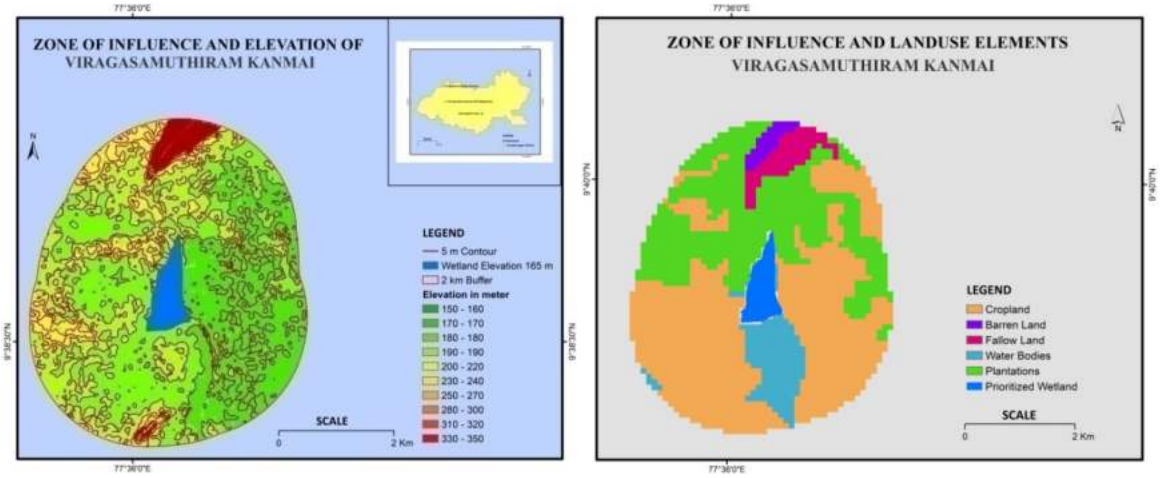
| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |
| 4 | Indian Palm Squirrel | *Funambulus palmarum* | Sciuridae | Least Concern |
| 5 | Indian grey Mongoose | *Herpestes edwardsi* | Herpestidae | Least Concern |

**Map 33.4: Comparative google imagery for Viragasamuthiram Kanmai**




**Map 33.5: Zone of Influence around the Viragasamuthiram Kanmai**



**Periyakulam Kanamai**

**Lake Survey Number:** 1469-B.

**Section I ; Identification, Location and Jurisdiction**

1.1 Commonly known as Periyakulam Kanmai (Plate 81).

1.2 Villages that surround the wetland include Kansapuram, Koomapatti, Ramasawyapuram, Ammatchiyarpuram.

1.3 & 1.4 The lake is based in Srivilipudur taluka in Viruddhanagar District of Tamil Nadu state.

1.5 The geographic coordinates are Latitude: 09° 38'47.2" N; 09° 38'40.6" N; 9° 38'39.4" N; 9° 38'42.4" N; and Longitude: 077° 36'30.8" E; 077° 36'33.3" E; 077° 36'34.6" E; 077° 36'31.8" E;

1.6 The wetland is not a Protected Area.

1.7 The wetland comes under the jurisdiction of PWD, Tamil Nadu government.

**Section II: Site Characteristics**

2.1 Area of the wetland- Based on the GPS coordinates we estimated the area of the wetland as 148 hectares (Map 33.6).

2.2 The Wetland type - the wetland belongs to the Natural (inland) category in the sub category intermittent seasonal lakes.

2.3 Based on the secondary information the average depth is 1 to 3 meters for the wetland.

2.4 The elevation of the wetland is 168 to 176 meters (asl).

2.5 Water regimes

a) The main source of water for the wetland is Rainfall, the surrounding runoff form the catchment area and the overflow of Arjuna Nadi Dam and the complex wetlands.
b) The water in the wetland is intermitent nature, as the wetland is mostly dependant on the rainfall and runoff waters. During our visit the wetland had little to no water.
c) The water form the wetland helps in replenishing the groundwater and the overflow feeds the adjoining agriculture fields.
d) The pH of the water was not undertaken as the water was not sufficient in the wetland
e) The lake has fresh water with the salinity recorded at 1.54 ppt at the time of sampling.
f) The wetland was completely dry and the aquatic vegetation like *Ipomoea* aquatica and other weeds dominated the landscape.

2.6 Climatic setting

a) Rainfall for the month of January, 2018 in Viruddhanagar was 28.5 mm.
b) The atmospheric temperature was 30 °C and the humidity was 53 %.

2.7 The area of zone of influence is 2663.95 hectares with a fixed buffer area of 2 kms around the wetland (Map 33.7).

2.8 The major land use around the wetland comprised of

| | |
|---|---|
| Forests 0%; | Grasslands/ scrubland 0%; |
| Agricultural lands 80 %; | Settlements (rural) 20%; |
| Settlements (Urban) 0%; | Industrial 0% |

2.9. The comparison of the wetland for the years 2007 and 2018 is given in Map 33.6 & 33.7.

**Section III- Biodiversity**

3.1 List of Plant species: 33 species of plants were recorded around the wetland during our visit (Table 33.7).

3.2 List of animal species: 49 animal species including 3 domestic species were recorded during the survey (Table 33.8a-g).

3.3 Species of Conservation importance: Two Threatened species of birds were observed during the survey (Table 33.8a-g).

3.4 Major Plant invasive alien species and extent of invasion: Seven invasive plants including *Parthenium hysterophorus*, *Prosopis juliflora* and *Ipomoea sp.* formed nearly major of the vegetation cover.

3.5 Major animal invasive alien species and extent of invasion: no invasive species were recorded.

**Section IV Ecosystem services**

4.1 The water form the wetland is not used for drinking purpose as the water is present for brief period. The municipal corporation provides drinking water form the Pilavakal dam water at regular intervals and the bore well that is used by the locals to fulfill their daily requirements.
4.2 There are large number of farmlands where agriculture is undertaken around the wetland using borewell water.
4.3 Fishery is undertaken.
4.4 The wetland is not used for any aquatic food cultivation.
4.5 The plants around the wetland are not used for any medicinal purpose.
4.6 The wetland is not used for any purpose but serves as a ground water recharge as long as the water is present.
4.7 The wetland plays the primary role of buffering by acting as a sponge during events of floods and extreme rainfall.
4.8 It is a major source of ground water recharge.
4.9 There is runoff form the surrounding area during the monsoon season.
4.10 The wetland has a temple along its bank and major cultural and religious activities are performed in the wetland when water is present.
4.11 The site is majorly used by the locals for grazing their cattle and goats.
4.12 There are agriculture or plantation activities within the wetland.
4.13 The wetland still provides a suitable habitat for terrestrial birds as we also recorded few migratory bird species during our survey.
4.14 The wetland supports local fish species when water is present and there is no commercial fishery.
4.15 Around the wetland we observed encroachment and solid waste dumping. There was no mining for sand or silt undertaken.

**Section V Pre-existing rights and privileges**

5.1 The fishing is not undertaken.
5.2 There is agriculture undertaken within the wetland.
5.3 There is very significant amount of agriculture around the wetland.
5.4 Grazing by the cattle is undertaken.
5.5 There is withdrawal of water for agriculture or fishery purpose.
5.6 The wetland has some quantity of water decause of the proximity of the dam.
5.7 The locals are well aware of the importance of the wetland and do try not to pollute it.

**Section VI Present and potential threats**

6.1 The wetland has a high potential of change in the outflow of the water due to the increasing encroachment.

**Section VII Notification Category**

The wetland is not included in any of the protection and conservation categories and is below 2500m below Sea level.

**Section VIII Activities proposed to be prohibited under Wetlands Rules 2010.**

The wetland faces a severe threat form drought and water scarcity gradually changing the wetland character.

**Section IX Activities proposed to be regulated under Wetlands Rules 2010.**

Unplanned development and increasing sewage and effluents are a major threat that needs to be regulated These activities although have spread all around the wetland should remain limited as it can adversely affect the wetland functions as well as disturb the habitat of the birds.

**Section X Listing of available scientific Resources Reports pertaining to the wetland**

There is no scientific literature available for Periyakulam Kanmai

Table 33.7: List of Plant species recorded along the Periyakulam Kanmai

| S. No | Scientific Name | Common Name | Local Name (Vernacular Name) | Family | Native / Alien / Invasive / Exotic | IUCN Category |
|---|---|---|---|---|---|---|
| 1 | *Arivela viscosa* | Asian spider flower | Naikkaduku | Cleomaceae | Native | NA |
| 2 | *Abutilon indicum* | Indian Mallow | Paniyaratutti | Malvaceae | Native | NA |
| 3 | *Tribulus terrestris* | Puncture Vine | Nerunchil | Zygophyllaceae | Invasive | NA |
| 4 | *Clitoria ternatea* | Butterfly Pea | Sangu Kannikkodi | Fabaceae | Native | NA |
| 5 | *Indigofera linnaei* | Birdsville Indigo | Sheppunerunji | Fabaceae | Native | NA |
| 6 | *Prosopis juliflora* | Algaroba | Seemai karuvel | Fabaceae | Invasive | NA |
| 7 | *Tephrosia purpurea* | Common Tephrosia | Kavali | Fabaceae | Native | EN |
| 8 | *Vachellia nilotica* | Gum Arabic | Karuvellaimaram | Fabaceae | Invasive | NA |
| 9 | *Coccinia grandis* | Ivy Gourd | Kovai | Cucurbitaceae | Native | NA |
| 10 | *Glinus lotoides* | Lotus Sweetjuice, damascisa | Cheruppadai, Ceruppati | Molluginaceae | Native | |
| 11 | *Paramollugo nudicaulis* | Daisy-leaved Chickweed | Parpadakam | Molluginaceae | Native | NA |
| 12 | *Morinda citrifolia* | Great Morinda | Nunamaram | Rubiaceae | Native | NA |
| 13 | *Cyanthillium cinereum* | Purple fleaband | Neichity | Asteraceae | Native | NA |
| 14 | *Parthenium hysterophorus* | Carrot Grass | Parthenium | Asteraceae | Invasive | NA |
| 15 | *Calotropis gigantea* | Crown Flower | Erukkenchedi | Apocynaceae | Native | NA |
| 16 | *Pergularia daemia* | Pergularia | Uttamani, Seendhal kodi | Apocynaceae | Native | NA |
| 17 | *Coldenia procumbens* | Creeping Coldenia | Seruppadai, Cheruppadi | Ehretiaceae | Native | NA |
| 18 | *Solanum trilobatum* | Purple Fruited Pea Eggplant | Tuduvalai | Solanaceae | Native | NA |
| 19 | *Spathodea campanulata* | African Tulip Tree | Patadi | Bignoniaceae | Exotic | LC |
| 20 | *Pedalium murex* | Large caltrops | Yanai nerunji,Perunerunji | Pedaliaceae | Native | NA |
| 21 | *Ocimum americanum* | Hoary Basil, | Nai Thulasi | Lamiaceae | Native | NA |
| 22 | *Ocimum tenuiflorum* | Holy basil,tulsi | Tulsi | Lamiaceae | Native | NA |
| 23 | *Achyranthes aspera* | Prickly Chaff Flower | Aakatam / Nayuruvi | Amaranthaceae | Native | NA |
| 24 | *Croton bonplandianus* | Ban Tulsi | Reilpoondu | Euphorbiaceae | Native | NA |
| 25 | *Phyllanthus niruri* | Stone Breaker, Seed Under Leaf | Keezhandlli | Phyllanthaceae | Native | NA |
| 26 | *Eichhornia crassipes* | Water Hyacinth | Venkayattamarai | Pontederiaceae | Invasive | NA |
| 27 | *Borassus flabellifer* | Polmyra Palm | Pannaimaram, Thalam | Arecaceae | Native | NA |
| 28 | *Cyperus corymbosus* | Peri peri | | Cyperaceae | Native | NA |
| 29 | *Cyperus esculentus* | Yellow Nutsedge | Korai | Cyperaceae | Native | LC |
| 30 | *Ipomoea aquatica* | Water Morning Glory | Sarkaraivalli | Convolvulaceae | Invasive | LC |
| 31 | *Cynodon dactylon* | Bermuda grass, Couch grass | | Poaceae | Invasive | NA |
| 32 | *Dactyloctenium aegyptium* | Crowfoot Grass | | Poaceae | Native | NA |
| 33 | *Perotis indica* | *Indian comet grass* | Narival,Kudiraival pullu, | Poaceae | Native | NA |

VU - Vulnerable, NT-Near Threatened, LC- Least Concern, DD- Data Deficient, NA -Not Assessed

Table 33.8a: List of Insect species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family |
|---|---|---|---|
| 1 | Grasshopper sp. | *Spathosternum prasiniferum* | Acrididae |
| 2 | Water Strider | *Gerris sp.* | Gerridae |
| 3 | Carpenter Bee | *Xylocopa latipes* | Apidae |
| 4 | Common Godzilla Ant | *Camponotus compressus* | Formicidae |

Table 33.8b: List of Butterfly species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Lime Butterfly | *Papilio demoleus* | Papilioninae | Common |
| 2 | Mottled Emigrant | *Catopsilia pyranthe* | Coliadinae | Common |
| 3 | Crimson Tip | *Colotis danae* | Pierinae | Uncommon |
| 4 | Plain Tiger | *Danaus chrysippus* | Danainae | Common |
| 5 | Joker | *Byblia ilithyia* | Biblidinae | Common |

Table 33.8c: List of Odonate species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Coromandel Marsh Dart | *Ceriagrion coromandelianum* | Coenagrionidae | Common |
| 2 | Common Clubtail | *Ictinogomphus rapax* | Gomphidae | Common |
| 3 | Ditch Jewel | *Brachythemis contaminata* | Libellulidae | Common |

| | | | | |
|---|---|---|---|---|
| 4 | Ruddy Marsh Skimmer | *Crocothemis servilia* | Libellulidae | Common |
| 5 | Ground Skimmer | *Diplacodes trivialis* | Libellulidae | Common |
| 6 | Green Marsh Hawk | *Orthetrum sabina* | Libellulidae | Common |
| 7 | Wandering Glider | *Pantala flavescens* | Libellulidae | Common |
| 8 | Yellow-Tailed Ashy Skimmer | *Potamarcha congener* | Libellulidae | Common |

Table 33.8d: List of Amphibian species recorded form the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Status |
|---|---|---|---|---|
| 1 | Skittering Forg | *Euphlyctis cyanophlyctis* | Dicroglossidae | Least Concern |

Table 33.8e: List of Reptile species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | IUCN Status |
|---|---|---|---|---|
| 1 | Common Garden Lizard | *Calotes versicolor* | Agamidae | Least Concern |

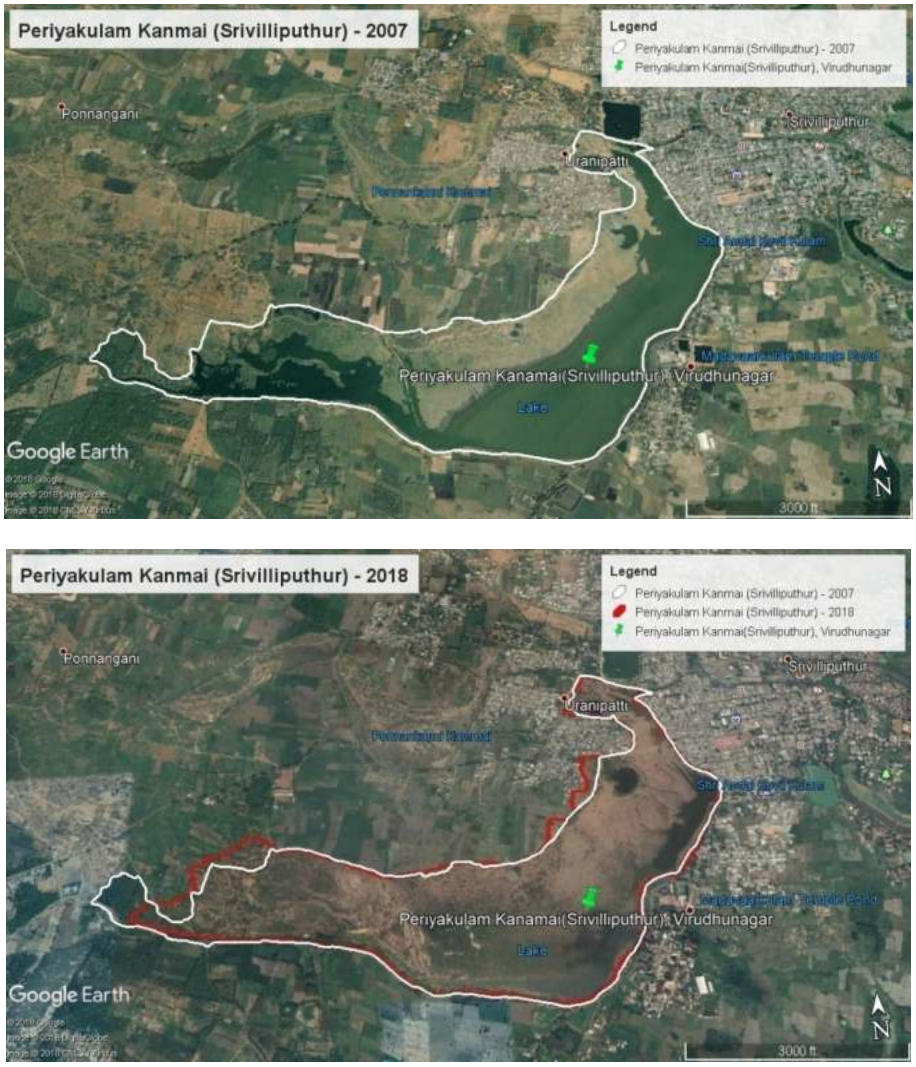
Table 33.8f: List of Bird species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Little Grebe | *Tachybaptus ruficollis* | Podicipedidae | Least Concern |
| 2 | Painted Stork | *Mycteria leucocephala* | Ciconiidae | Near Threatened |
| 3 | Black-headed Ibis | *Threskiornis melanocephalus* | Threskiornithidae | Near Threatened |
| 4 | Red-naped Ibis | *Pseudibis papillosa* | Threskiornithidae | Least Concern |
| 5 | Glossy Ibis | *Plegadis falcinellus* | Threskiornithidae | Least Concern |
| 6 | Indian Pond Heron | *Ardeola grayii* | Ardeidae | Least Concern |
| 7 | Spot-billed Pelican | *Pelecanus philippensis* | Pelecanidae | Near Threatened |
| 8 | Little Cormorant | *Phalacrocorax niger* | Phalacrocoracidae | Least Concern |
| 9 | White-breasted Waterhen | *Amaurornis phoenicurus* | Rallidae | Least Concern |
| 10 | Purple Swamphen | *Porphyrio porphyrio* | Rallidae | Least Concern |
| 11 | Common Moorhen | *Gallinula chloropus* | Rallidae | Least Concern |
| 12 | Eurasian Coot | *Fulica atra* | Rallidae | Least Concern |
| 13 | Black-winged Stilt | *Himantopus himantopus* | Recurvirostridae | Least Concern |
| 14 | Red-wattled Lapwing | *Vandllus indicus* | Charadriidae | Least Concern |
| 15 | Little Ringed Plover | *Charadrius dubius* | Charadriidae | Least Concern |
| 16 | Painted Snipe | *Rostratula benghalensis* | Rostratulidae | Least Concern |
| 17 | Common Pigeon | *Columba livia* | Columbidae | Least Concern |
| 18 | Eurasian Collared Dove | *Streptopelia decaocto* | Columbidae | Least Concern |
| 19 | Spotted Dove | *Stigmatopelia chinensis* | Columbidae | Least Concern |
| 20 | Asian Palm Swift | *Cypsiurus balasiensis* | Apodidae | Least Concern |
| 21 | White-throated Kingfisher | *Halcyon smyrnensis* | Alcedinidae | Least Concern |
| 22 | Black Drongo | *Dicrurus macrocercus* | Dicruridae | Least Concern |
| 23 | House Crow | *Corvus splendens* | Corvidae | Least Concern |
| 24 | Ashy Prinia | *Prinia socialis* | Cisticolidae | Least Concern |
| 25 | Common Myna | *Acridotheres tristis* | Sturnidae | Least Concern |
| 26 | Pied Bushchat | *Saxicola caprata* | Muscicapidae | Least Concern |
| 27 | White-browed Wagtail | *Motacilla maderaspatensis* | Motacillidae | Least Concern |

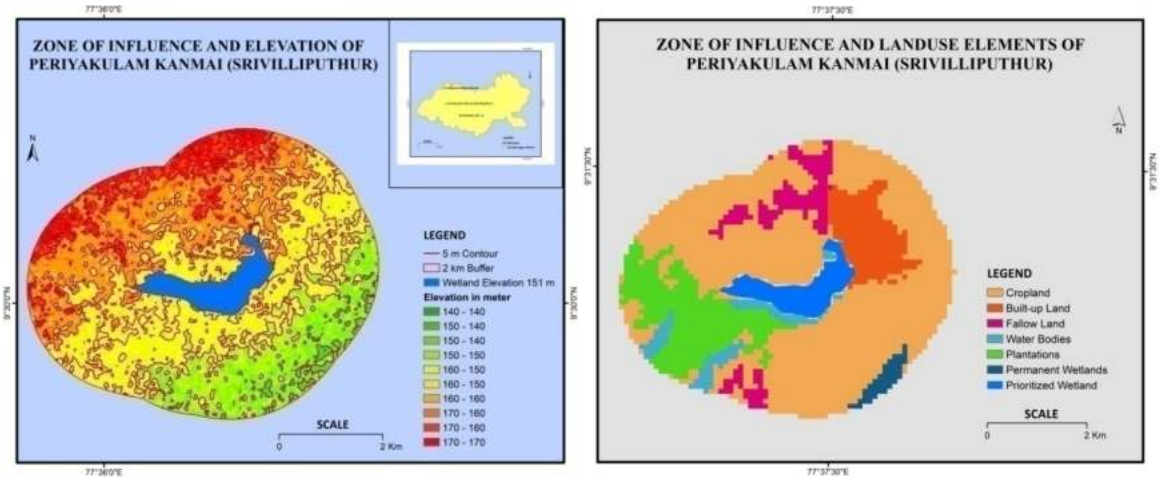
Table 33.8g: List of Mammal species recorded along the Periyakulam Kanmai

| S. No | Common Name | Scientific Name | Family | Category |
|---|---|---|---|---|
| 1 | Dog | *Canis lupus familiaris* | Canidae | Domestic |
| 2 | Cattle | *Bos taurus* | Bovidae | Domestic |
| 3 | Goat | *Capra aegagrus hircus* | Bovidae | Domestic |

**Map 33.6: Comparative google imagery for Periyakulam Kanmai**




**Map 33.7: Zone of Influence around the PeriyakulamKanmai**



## 34. Prioritization of wetlands

On preparing the brief document we evaluated the wetland health status giving a score to each wetland. The score was calculated at two levels before arriving at the final score. The first level included allotting points to the wetlands on the basis of Ecosystem services, the landscape use pattern and the threats observed on 10 point scale. At the second level we used the Biodiversity recorded during the field visit. The biodiversity value was calculated on the basis of the total flora and fauna recorded for the wetland divided against the total flora and fauna recorded form the district during our field study. Both scores were totalled to arrive at the final wetland health status score. Based on the Wetland Health Status (WHS) Score we have ranked (Rank 1- Bad to Rank 141 - Good) the wetlands and prioritised them for conservation. The WHS scores obtained have been categorised into six groups (Table 34.1) as follows

Table 34.1: Groups of wetlands on the basis of Wetland Health Status (WHS) Score.

| S.No | Wetland Health Status Score group | Number of wetlands | Status | Action needed |
|---|---|---|---|---|
| 1 | -0.75 to 0.00 | 04 | Critical & Serious concern | Most Urgent and immediate |
| 2 | 0.001 to 0.500 | 19 | Critical & Serious concern | Urgent and immediate |
| 3 | 0.501 to 1.00 | 21 | Serious concern | Immediate |
| 4 | 1.001 to 1.500 | 40 | Advance concerns | Threats need to be addressed on a priority |
| 5 | 1.501 to 2.00 | 25 | Threats are in initial stages | Conservation measures need to be initiated |
| 6 | Above 2.000 | 32 | Stable conditions | Conservation plan should be implemented |

Based on our calculations and the ranks (Table 34.2) we have found 23 wetlands form 15 districts with critical concerns regarding the threats to the land use and biodiversity. Four of these 23 wetlands namely Uppidamangalam Lake, Velliyanai Lake form Karur and Panamarathupatti Eri form Salem and Madipakkam Lake form Chennai need the most urgent and immediate conservation action. Among the 141 wetlands, 32 come in the stable condition category, however only the Marlimund wetland form Nilgiris district has the best status existing in a pristine unspoilt state. The remaining 31 have several environmental concerns that should not be neglected, as they could lead to fast deterioration of the wetland.

Although it is necessity to conserve all the 141 wetlands, as the land use change and other threats are common and rampant at varying degrees. The prioritization exercise based on our rapid study to prepare the brief document can be used as a tool to help in understanding the wetland to

implement the conservation plans. The wetlands require regular monitoring to address any changes or modification that may occur in a wetland over a period of time. A simple protocol to monitor the wetlands (Apendix 1) is also provided to help in the field staff on a monthly basis.

Table 34.2: Ranking of wetlands based on the Wetland Health Status (WHS) Score.

| District | Wetland | Wetland Health Status Score | Rank |
|---|---|---|---|
| Karur | Uppidamangalam Lake | -0.742 | 1 |
| Karur | Velliyanai Lake | -0.517 | 2 |
| Salem | Panamarathupatti Eri | -0.361 | 3 |
| Chennai | Madipakkam Lake | -0.183 | 4 |
| Chennai | Pallikaranai Wetland | 0.004 | 5 |
| Thoothukudi | Puthantharuvai Tank | 0.132 | 6 |
| Ramanathapuram | Melayakudi Kulam | 0.147 | 7 |
| Villupuram | Melmalayanur Lake | 0.179 | 8 |
| Erode | Avalpoondurai Lake | 0.181 | 9 |
| Namakkal | Puthur Lake | 0.189 | 10 |
| Thanjavur | Sendakkottai Lake | 0.207 | 11 |
| Sivagangai | Piravalur Kanmai | 0.231 | 12 |
| Salem | Panai Eri | 0.233 | 13 |
| Madurai | Thenur Periyakulam Kanmai | 0.287 | 14 |
| Ramanathapuram | Rajasingamangalam Lake | 0.289 | 15 |
| Kanchipuram | Magaral Lake | 0.305 | 16 |
| Pudukkottai | Annavasal Periyakulam Lake | 0.338 | 17 |
| Madurai | Urapanur Periyakanmai | 0.348 | 18 |
| Perambalur | Kurumbalur Lake | 0.36 | 19 |
| Kanchipuram | Great Salt Lake | 0.408 | 20 |
| Madurai | T. Kunnathur Lake | 0.433 | 21 |
| Thanjavur | Pannavayal Eri | 0.433 | 22 |
| Perambalur | Arumbavur Big Lake | 0.494 | 23 |
| Salem | Vadamandri Lake | 0.52 | 24 |
| Cuddalore | Bahour Lake | 0.551 | 25 |
| Perambalur | Athiyur Lake | 0.561 | 26 |
| Krishnagiri | Rama Naicken Lake | 0.589 | 27 |
| Tiruvarur | Moovanallur Lake | 0.636 | 28 |
| Chennai | Korattur Lake | 0.665 | 29 |
| Ramanathapuram | Brahmanankulam | 0.703 | 30 |
| Kanchipuram | Sriperumbudur Lake | 0.715 | 31 |
| Tiruvannamalai | Pelasur Lake | 0.734 | 32 |
| Thanjavur | Kallaperambur Lake | 0.747 | 33 |

| | | | |
|---|---|---|---|
| Tiruvarur | Vadakku Eri | 0.748 | 34 |
| Karur | Panjappatti Lake | 0.764 | 35 |
| Krishnagiri | Kondama Eri | 0.788 | 36 |
| Tiruvannamalai | Anakkavoor Lake | 0.788 | 37 |
| Theni | Kamarajapuram Lake | 0.832 | 38 |
| Cuddalore | Wellington Lake | 0.835 | 39 |
| Villupuram | Sandapet Lake | 0.85 | 40 |
| Sivagangai | Kattikulam Kanmai | 0.869 | 41 |
| Tirunelveli | Chetruthamarai Kulam | 0.879 | 42 |
| Tirunelveli | V.M.Chatram Lake | 0.882 | 43 |
| Virudhunagar | Periyakulam Kanmai (Srivilliputhur) | 0.921 | 44 |
| Virudhunagar | Viragasamuthiram Kanmai | 1.008 | 45 |
| Tirunelveli | Puthukulam Lake | 1.009 | 46 |
| Theni | Periyakulam Kanmai | 1.056 | 47 |
| Vellore | Kalavai Lake | 1.056 | 48 |
| Theni | Thamaraikulam Kanami | 1.088 | 49 |
| Kanchipuram | Sirudavoor Lake | 1.164 | 50 |
| Kanchipuram | Odiyur Lake | 1.227 | 51 |
| Tiruchirappalli | Alathudaiyanpatti Lake | 1.243 | 52 |
| Tiruchirappalli | Valavanthankottai Tank | 1.243 | 53 |
| Tiruvallur | Pulicat Lake | 1.26 | 54 |
| Kanchipuram | Parandur Lake | 1.27 | 55 |
| Erode | Anthiyur Periya Eri | 1.293 | 56 |
| Kanyakumari | Vembanur Lake | 1.303 | 57 |
| Tiruvannamalai | Ponnur Lake | 1.303 | 58 |
| Kanyakumari | Sengulam | 1.322 | 59 |
| Ariyalur | Sukran Lake | 1.33 | 60 |
| Kanchipuram | Chembarambakkam Lake | 1.34 | 61 |
| Chennai | Velachery Lake | 1.344 | 62 |
| Tiruppur | Kongur Idachi Kulam | 1.344 | 63 |
| Tiruvannamalai | Dusi Mamandoor Lake | 1.347 | 64 |
| Kanchipuram | Uthukadu Lake | 1.352 | 65 |
| Vellore | Mahendravadi Lake | 1.376 | 66 |
| Tiruvallur | Padur-Thangal Eri | 1.377 | 67 |
| Dharmapuri | Thumbala Halli Lake | 1.385 | 68 |
| Tirunelveli | Melakulam Lake | 1.386 | 69 |
| Cuddalore | Perumal Lake | 1.388 | 70 |
| Tiruvarur | Thirumeni Eri | 1.394 | 71 |
| Tiruvannamalai | Vakkadai Lake | 1.398 | 72 |
| Kanchipuram | Kolavai Lake | 1.404 | 73 |
| Ramanathapuram | Sakkarakottai Bird Sanctuary | 1.405 | 74 |
| Tiruvannamalai | Kappalur Lake | 1.412 | 75 |

| | | | |
|---|---|---|---|
| Tiruvallur | Mappedu Lake | 1.413 | 76 |
| Tiruvannamalai | Thennampattu Lake | 1.418 | 77 |
| Thoothukudi | Sivagalai Kulam | 1.434 | 78 |
| Dharmapuri | Kadagathur Lake | 1.435 | 79 |
| Kanyakumari | Narikulam | 1.444 | 80 |
| Ramanathapuram | Uthirakosamangai Lake | 1.448 | 81 |
| Thoothukudi | Kadamba Kulam | 1.45 | 82 |
| Cuddalore | Veeranam Lake | 1.458 | 83 |
| Kanyakumari | Theroor Lake | 1.466 | 84 |
| Namakkal | Amirthasagaram Lake | 1.507 | 85 |
| Dindigul | Vaiyapuri Tank | 1.526 | 86 |
| Villupuram | Kaliveli Lake | 1.526 | 87 |
| Pudukkottai | Seiyanam Periya Eri | 1.529 | 88 |
| Kanyakumari | Suchindram Kulam | 1.534 | 89 |
| Thoothukudi | Seydunganallur Kulam | 1.547 | 90 |
| Vellore | Kaveripakkam Lake | 1.561 | 91 |
| Madurai | Vandiyur Lake | 1.573 | 92 |
| Thoothukudi | Karungulam Lake | 1.585 | 93 |
| Dharmapuri | Dharmapuri Lake | 1.615 | 94 |
| Virudhunagar | Ammapatti Lake | 1.624 | 95 |
| Nilgiris | Ooty Lake | 1.641 | 96 |
| Tiruppur | Koolipalayam Lake | 1.644 | 97 |
| Ariyalur | Elanthaikudam Lake | 1.647 | 98 |
| Pudukkottai | Ponpethi Lake | 1.65 | 99 |
| Namakkal | Oomayampatti Lake | 1.689 | 100 |
| Krishnagiri | Barur Lake | 1.73 | 101 |
| Kanchipuram | Thenneri Lake | 1.758 | 102 |
| Tiruvannamalai | Sathanur Reservoir | 1.791 | 103 |
| Sivagangai | Andakudi Kanmai | 1.793 | 104 |
| Coimbatore | Perur Lake | 1.795 | 105 |
| Dindigul | Idumban Kulam | 1.803 | 106 |
| Kanyakumari | Manavalakurichi Kulam | 1.803 | 107 |
| Chennai | Ambattur Lake | 1.835 | 108 |
| Kanchipuram | Thirupulivanam Lake | 1.867 | 109 |
| Ramanathapuram | Chitrangudi Bird Sanctuary | 2 | 110 |
| Kanchipuram | Govindavadi Lake | 2.322 | 111 |
| Kanchipuram | Uthiramerur Lake | 2.342 | 112 |
| Tiruvallur | Puzhal Lake | 2.355 | 113 |
| Tirunelveli | Vijayanarayanan Tank | 2.379 | 114 |
| Coimbatore | Kovaipudur Lake | 2.409 | 115 |
| Nagapattinam | Keeran Lake | 2.415 | 116 |
| Coimbatore | Kurichi Kulam | 2.418 | 117 |

| | | | |
|---|---|---|---|
| Villupuram | Ousteri Lake | 2.42 | 118 |
| Tiruvallur | Poondi Lake | 2.421 | 119 |
| Tiruvallur | Coovam Lake | 2.434 | 120 |
| Coimbatore | Ukkadam Lake | 2.465 | 121 |
| Nagapattinam | Embavai Perunthottam Lake | 2.481 | 122 |
| Tiruvarur | Udayamarthandapuram Bird Sanctuary | 2.52 | 123 |
| Villupuram | Valathy Lake | 2.526 | 124 |
| Tiruvarur | Vaduvur Lake | 2.536 | 125 |
| Tirunelveli | Koonthankulam Bird Sanctuary | 2.539 | 126 |
| Ariyalur | Venganur Lake | 2.548 | 127 |
| Tiruchirappalli | Gundur Lake | 2.573 | 128 |
| Coimbatore | Sulur Lake | 2.599 | 129 |
| Tiruppur | Manickapuram Kulam | 2.612 | 130 |
| Sivagangai | Vettangudi Bird Sanctuary | 2.671 | 131 |
| Tiruchirappalli | Koothappar Big Tank | 2.675 | 132 |
| Kanchipuram | Madhuranthakam Lake | 2.855 | 133 |
| Erode | Kavilipalayam Lake | 3.342 | 134 |
| Kanchipuram | Kooram Lake | 3.414 | 135 |
| Nagapattinam | Point Calimere Wildlife and Bird Sanctuary | 3.5 | 136 |
| Erode | Vellode Bird Sanctuary | 3.546 | 137 |
| Coimbatore | Singanallur Tank | 3.971 | 138 |
| Dindigul | Kodaikanal Lake | 3.974 | 139 |
| Tiruvallur | Cholavaram Lake | 4.347 | 140 |
| Nilgiris | Marlimund Lake | 5.115 | 141 |

**Appendix 1:**

**Protocol for monitoring of wetlands by field staff**

1. Date :_____ Time:_____am / pm

2. Name and designation of the field staff:_____

3.Name of the wetland :_____

4. District: _____5. State _____

6. Survey No if available:_____ Number of surrounding villages_____

7. Latitude:_____ Longitude: _____

8. Type of wetland: Natural (Inland / Marine) / Manmade (Aquaculture Pond / Tank / Saltpan/ Other)

9. Connection to River/ stream / canal / another wetland _____

10. Rainfall:_____ 10. Humidity:_____

11. Presence of water in the wetland : (Full /Three fourth /Half /Wet & Empty /Dry & Empty)

12. Land Use :Settlements /Industries /Agriculture /Forest /Grassland /Shrubland /Forest

Any Other Land use_____

13: Livelihood: Agriculture / Fishing / Aquaculture / Pastoral / Industries / others _____

14. Use of Wetland Water: _____

15. Religious structures around the wetland: Yes / No ; Number/ Name_____

16. Tourism: Religious / Cultural / Nature / Others _____

17 Water Quality:

17.a. Colour: Colourless / Green /Yellow / Brown/ Blue/ Red / Black / Other._____

17.b. Odour: No Smell/ Smell present - type _____

17.c.pH_____; TDS _____; Conductivity _____; Salinity _____

17.d Atmospheric Temperature_____ Water Temperature_____

18. Soil Characteristics

18.a: Colour: Gray / Brown / Red / Yellow /Black / Green / Blue / Other_____

18.b: Moisture: Just Wet/ Heavily soaked/ Dry / Other/ _____

19. Flora* : Inside wetland (Yes / No/ Not certain)

Type ((Trees/ Herbs/ Shrubs / Grasses/ Marshy / algae/ others) _____

Around the Wetland (Trees/ Herbs/ Shrubs / Grasses / Others)_____

Comment:_____

20. Fauna* :

| S. No. | Fauna | Present / Absent | Local Native/ Introduced | Number of types | Names | Numbers |
|---|---|---|---|---|---|---|
| 1 | Insects | | | | | |
| 2. | Arachnida | | | | | |
| 3. | Butterflies / Moths | | | | | |
| 4. | Fishes | | | | | |
| 5. | Amphibians | | | | | |
| 6. | Reptiles | | | | | |
| 7. | Birds | | | | | |
| 8. | Mammals | | | | | |
| 9. | Any other life forms | | | | | |

* - Attach additional sheets if required.

21. Threats :

21. a. Sewage: _____

21. b. Industrial Effluents: _____

21. c. Solid waste dumping:_____

21.d. Release of Hazardous waste: _____

21.e. Wetland bed Sand / Silt mining: _____

21.f. Illegal fishery:_____

21.g. Agriculture / Plantation inside the wetland _____

21.h. Invasive species :_____

21.i. Siltation :_____

21.j. Immersion of religious nature :_____

21.k. Encroachment :_____

21.l. Construction activities: _____

20.m. Blockage of water flow :_____

21.n. Any Other :_____

Signature of the field staff:

# Photo Plates

## Plate 1: Ariyalur District





**Elanthaikudam Lake**





**Sukran Lake**

## Plate 2: Ariyalur District





**Venganur Lake**

## Plate 3: Chennai District





**Ambattur Lake**





**Korattur Lake**

## Plate 4: Chennai District





Madipakkam Lake





Pallikaranai Wetland

## Plate 5: Chennai District





**Velachery Lake**

## Plate 6: Coimbatore District





**Kovaipudur Lake**





**Kurichi Kulam**

## Plate 7: Coimbatore District





**Perur Lake**





**Singanallur Tank**

## Plate 8: Coimbatore District





**Sulur Lake**





**Ukkadam Lake**

## Plate 9: Cuddalore District





**Bahour Lake**





**Perumal Lake**

## Plate 10: Cuddalore District





**Veeranam Lake**





**Wellington Lake**

## Plate 11: Dharmapuri District





**Dharmapuri Lake**





**Kadagathur Lake**

## Plate 12: Dharmapuri District





**Thumbala Halli Lake**

## Plate 13: Dindigul District





Kodaikanal Lake





Idumban Kulam

## Plate 14: Dindigul District





Vaiyapuri Tank

## Plate 15: Erode District





**Anthiyur Periya Eri**





**Avalpoondurai Lake**

## Plate 16: Erode District





Kavilipalayam Lake





Vellode Bird Sanctuary

## Plate 17: Kanchipuram District





**Chembarambakkam Lake**





**Govindavadi Lake**

## Plate 18: Kanchipuram District





Great Salt Lake





Kolavai Lake

## Plate 19: Kanchipuram District





**Kooram Lake**





**Madhuranthakam Lake**

## Plate 20: Kanchipuram District





**Magaral Lake**



**Odiyur Lake**

## Plate 21: Kanchipuram District





Parandur Lake





Sirudavoor Lake

## Plate 22: Kanchipuram District





**Sriperumbudur Lake**





**Thenneri Lake**

## Plate 23: Kanchipuram District





Thirupulivanam Lake





Uthiramerur Lake

## Plate 24: Kanchipuram District





**Uthukadu Lake**

## Plate 25: Kanyakumari District





**Manavalakurichi Lake**





**Narikulam Lake**

## Plate 26: Kanyakumari District





Sengulam





Suchindram Kulam Complex

## Plate 27: Kanyakumari District





**Theroor Wetland Complex**





**Vembanur Lake**

## Plate 28: Karur District





Panjappatti Lake



Uppidamangalam Lake

## Plate 29: Karur District





**Velliyanai Lake**

## Plate 30: Krishnagiri District





**Barur Lake**





**Kondama Eri**

## Plate 31: Krishnagiri District





**Rama Naicken Lake**

## Plate 32:Madurai District





T. Kunnathur Lake





Thenur Periyakulam Kanmai

## Plate 33:Madurai District





Urapanur Periyakanmai





Vandiyur Lake

## Plate 34: Nagapattinam District





Embavai Perunthottam Lake





Keeran Lake

## Plate 35: Nagapattinam District





## Point Calimere Wildlife and Bird Sanctuary

## Plate 36: Namakkal District





Amirthasagaram Lake





Oomayampatti Lake

## Plate 37: Namakkal District





**Puthur Lake**

## Plate 38: Nilgiris District





Marlimund Lake





Ooty Lake

## Plate 39: Perambalur District





Arumbavur Big Lake





Athiyur Lake

## Plate 40: Perambalur District



**Kurumbalur Lake**

## Plate 41: Pudukkottai District





Annavasal Periyakulam Lake





Ponpethi Lake

## Plate 42: Pudukkottai District





**Seiyanam Periya Eri**

## Plate 43: Ramanathapuram District





**Brahmanankulam**





**Chitrangudi Bird Sanctuary**

## Plate 44: Ramanathapuram District



Melayakudi Kulam





Rajasingamangalam Lake

## Plate 45: Ramanathapuram District





**Sakkarakottai Bird Sanctuary**





**Uthirakosamangai Lake**

## Plate 46: Salem District





Panai Eri





Panamarathupatti Eri

## Plate 47: Salem District





**Vadamaneri Lake**

## Plate 48: Sivagangai District





Andakudi Kanmai





Kattikulam Kanmai

## Plate 49: Sivagangai District





Piravalur Kanmai





Vettangudi Bird Sanctuary

## Plate 50: Thanjavur District





Kallaperambur Lake





Pannavayal Eri

## Plate 51: Thanjavur District





**Sendakkottai Lake**

## Plate 52: Theni District





Kamarajapuram Lake





Periyakulam Kanmai

## Plate 53: Theni District





Thamaraikulam Kanmai

## Plate 54: Thoothukudi District





Kadamba Kulam





Karungulam Lake

## Plate 55: Thoothukudi District





Puthantharuvai Tank





Seydunganallur Kulam

## Plate 56: Thoothukudi District





**Sivagalai Kulam**

## Plate 57: Tiruchirappalli District





Alathudaiyanpatti Lake





Gundur Lake

## Plate 58: Tiruchirappalli District





Koothappar Big Tank





Valavanthankottai Tank

## Plate 59: Tirunelveli District





Chetruthamarai Kulam





Koonthankulam Bird Sanctuary

## Plate 60: Tirunelveli District





Melakulam Lake





Puthukulam Lake

## Plate 61: Tirunelveli District





V.M.Chatram Lake





Vijayanarayanan Tank

## Plate 62: Tiruppur District





Kongur Idachi Kulam





Koolipalayam Lake

## Plate 63: Tiruppur District





**Manickapuram Kulam**

## Plate 64: Tiruvallur District





Cholavaram Lake





Coovam Lake

## Plate 65: Tiruvallur District





Mappedu Lake





Padur-Thangal Eri

## Plate 66: Tiruvallur District





Poondi Lake





Pulicat Lake

## Plate 67: Tiruvallur District





**Puzhal Lake**

## Plate 68: Tiruvannamalai District





Anakkavoor Lake





Dusi Mamandoor Lake

## Plate 69: Tiruvannamalai District





Kappalur Lake





Pelasur Lake

## Plate 70: Tiruvannamalai District





**Ponnur Lake**





**Sathanur Reservoir**

## Plate 71: Tiruvannamalai District





Thennampattu Lake





Vakkadai Lake

## Plate 72: Tiruvarur District





Moovanallur Lake





Thirumeni Eri

## Plate 73: Tiruvarur District





Udayamarthandapuram Bird Sanctuary





Vadakku Eri

## Plate 74: Tiruvarur District





**Vaduvur Lake**

## Plate 75: Vellore District





Kalavai Lake





Kaveripakkam Lake

## Plate 76: Vellore District





**Mahendravadi Lake**

## Plate 77: Villupuram District





Kaliveli Lake





Melmalayanur Lake

## Plate 78: Villupuram District





Ousteri Lake



Sandapet Lake

## Plate 79: Villupuram District





**Valathy Lake**

## Plate 80: Virudhunagar District





Ammapatti Lake



Periyakulam Kanmai (Srivilliputhur)

## Plate 81: Virudhunagar District





**Viragasamuthiram Kanmai**

# PLATE 82: Wetland Flora



*Abutilon indicum*



*Acalypha ciliata*



*Achyranthes aspera*



*Aerva javanica*



*Aerva lanata*



*Agave americana*



*Agave beauleriana*



*Alstroemeria pelegrina*



*Alternanthera ficoidea*



*Alternanthera pungens*



*Alternanthera sessilis*



*Alysicarpus ovalifolius*

# PLATE 83: Wetland Flora



*Amaranthus spinosus*



*Amaranthus viridis*



*Ammania baccifera*



*Anisomeles malabarica*



*Argyranthemum gracile*



*Aristida setacea*



*Aristolochia brachteolata*



*Arivela viscosa*



*Asparagus racemosus*



*Azadirachta indica*



*Bambusa bambos*



*Barleria buxifolia*

# PLATE 84: Wetland Flora



*Barringtonia acutangula*



*Bonnaya ciliata*



*Borassus flabellifer*



*Brachiaria ramosa*



*Brugmansia suaveolens*



*Calotropis gigantea*



*Canna indica*



*Cassine glauca*



*Casuarina equisetifolia*



*Catharanthus roseus*



*Cayratia trifolia*



*Ceiba pentandra*

# PLATE 85: Wetland Flora



*Celosia argentea*



*Chloris barbata*



*Chrysopogon zizanioides*



*Cissus vitiginea*



*Citrullus colocynthis*



*Clitoria ternatea*



*Cocos nucifera*



*Coldenia procumbens*



*Commelina benghalensis*



*Cordia dichotoma*



*Crinum powellii*



*Crotalaria pallida*

# PLATE 86: Wetland Flora



*Cucumis dipsaceus*



*Cyanotis arachnoidea*



*Cyanotis axillaris*



*Cymbopogon citratus*



*Cynodon dactylon*



*Dactyloctenium aegyptium*



*Datura metel*



*Datura stramonium*



*Dicliptera paniculata*



*Digera muricata*



*Ecbolium ligustrinum*



*Eragrostis pilosa*

# PLATE 87: Wetland Flora



*Erythrina suberosa*



*Eucalyptus tereticornis*



*Euphorbia heterophylla*



*Euphorbia hirta*



*Evolvulus alsinoides*



*Ficus benghalensis*



*Glinus lotoides*



*Glinus oppositifolius*



*Gynandropsis gynandra*



*Heliotropium curassavicum*



*Heliotropium indicum*



*Hydrangea macrophylla*

# PLATE 88: Wetland Flora



*Indigofera linnaei*



*Ipomoea aquatica*



*Ipomoea obscura*



*Jatropha glandulifera*



*Jatropha gossypifolia*



*Justicia tranquebariensis*



*Leptopetalum biflorum*



*Malvastrum coromandelianum*



*Martynia annua*



*Merremia emarginata*



*Mesosphaerum suaveolens*



*Mimosa pudica*

# PLATE 89: Wetland Flora



*Morinda coreia*



*Nephrolepis exaltata*



*Neptunia oleracea*



*Nerium oleander*



*Nymphaea odorata*



*Oldenlandia umbellata*



*Opuntia stricta*



*Ottelia alismatoides*



*Oxystelma esculentum*



*Paramollugo nudicaulis*



*Passiflora foetida*



*Passiflora mollissima*

# PLATE 90: Wetland Flora



*Pedalium murex*



*Pergularia daemia*



*Phoenix sylvestris*



*Phyllanthus niruri*



*Plumbago zeylanica*



*Pongamia pinnata*



*Prosopis juliflora*



*Ricinus communis*



*Saccharum spontaneum*



*Salicornia brachiata*



*Schoenoplectus subulatus*



*Senna auriculata*

# PLATE 91: Wetland Flora



*Sesamum indicum*



*Sesuvioum portulacastrum*



*Sida cordifolia*



*Sida acuta*



*Solanum nigrum*



*Solanum trilobatum*



*Solanum virginianum*



*Spermacoce ocymoides*



*Sphaeranthus indicus*



*Striga lutea*



*Tephrosia purpurea*



*Tragia plukenetii*

# PLATE 82: Wetland Flora



*Tragus mongolorum*



*Trianthema portulacastrum*



*Sida cordifolia*



*Vachelia nilotica*



*Vitex negundo*



*Xanthium indicum*



*Xanthium strumarium*



*Ziziphus oenoplia*

# PLATE 93: Invasive Flora



*Argemone mexicana*



*Eichhornia crassipes*



*Ipomoea carnea*



*Lantana camara*



*Leucaena leucocephala*



*Mimosa diplotricha*



*Muntingia calbura*



*Parthenium hysterophorus*



*Solanum elaeagnifolium*



*Typha angustifolia*



*Ulex europeus*

# Plate 94: Diplopoda

**Family: Polydesmida**



***Harpaphe haydeniana***

**Family: Spirostreptida**



***Spinotarsus colosseus***

# Plate 95: Insects

## Class: Insecta; Order: Orthoptera; Family: Acrididae



*Acrida exaltata*



*Chrotogonus trachypterus*



*Criotettix bispinosus*



*Diabolocatantops pinguis*



*Leptysma marginicollis*



*Spathosternum prasiniferum*

## Family: Pyrgomorphidae



*Teratodes monticollis*



*Neorthacris acuticeps*

## Class: Insecta; Order: Hemiptera
## Family: Aphrophoridae



*Clovia sp.,*

## Class: Insecta; Order: Mantodea; Family: Mantodea



*Ootheca*



*Praying Mantis*

## Family: Belostomatidae



*Lethocerus deyrollei*

# Plate 96: Insects

## Class: Insecta; Order: Hemiptera

Family: Coreidae



*Anoplocnemis phasiana*

Family: Gerridae



*Gerris sp.,*

Family: Membracidae



*Oxyrachis tarandus*

Family: Nepidae



*Laccotrephes griseus*

Family: Pyrrhocoridae



*Dysdercus cingulatus*

Family: Reduviidae



*Reduviidae sp.,*

## Class: Insecta; Order: Coleoptera; Family: Carabidae

Family: Scutelleridae



*Chrysocoris stollii*



*Brachinus sp.,*



*Anthia sexguttata*

Family: Cantharidae



*Rhagonycha sp.,*

Family: Chrysomelidae



*Haemaltica sp.,*

Family: Coccinellidae



*Coccinella transversalis*

# Plate 97: Insects

## Class: Insecta; Order: Coleoptera

**Family: Coccinellidae**



***Henosepilachna vigintioctopunctata***

**Family: Gyrinidae**



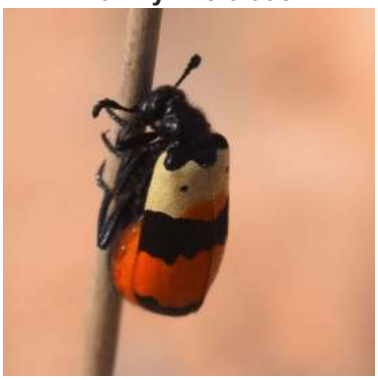
***Gyrinus sp.,***

**Family: Scarabaeidae**



***Onthophagus sp.,***

**Family: Meloidae**



***Hycleus sp.,***

---

## Class: Insecta; Order: Hymenoptera; Family: Apidae



***Amegilla cingulata***



***Apis dorsata***



***Xylocopa latipes***

---

## Class: Insecta; Order: Neuroptera; Family: Myrmeleontidae



# Plate 98: Insects

## Class: Insecta; Order: Hymenoptera; Family: Formicidae



*Leptogenys chinensis*



*Meranoplus bicolor*



*Monomorium pharaonis*



*Myrmicaria brunnea*



*Polyrhachis rastellata*



*Tetraponera rufonigra*



*Camponotus sericeus*



*Camponotus sericeus (Red Morph)*



*Camponotus sp.,*



*Camponotus compressus*

# Plate 99: Insects

## Class: Insecta; Order: Hymenoptera

### Family: Pompilidae

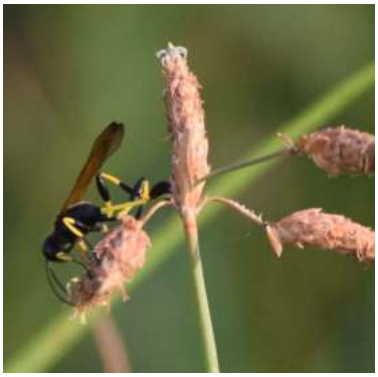


*Cryptocheilus bicolor*



*Pompilidae sp.,*

### Family: Sphecidae



*Sceliphron caementarium*

### Family: Vespidae



*Ancistrocerus sp.,*



*Delta campaniforme*



*Ropalidia marginata*

## Class: Insecta; Order: Diptera

### Family: Asilidae



*Asilidae sp.,*

### Family: Muscidae



*Musca domestica*

### Family: Sarcophagidae



*Sarcophagidae*

# PLATE 100: Lepidoptera

## Family: Hesperioidea Sub Family: Pyrginae



*Gomalia elma*

## Family: Hesperioidea Sub Family: Hesperiinae



*Borbo cinnara*

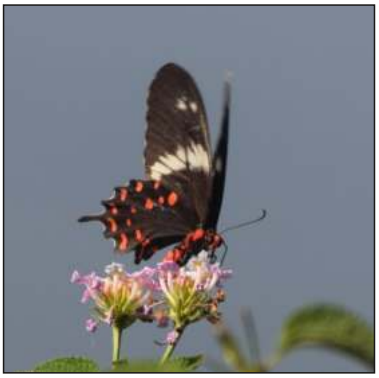


*Suastus gremius*

## Family: Papilionidae Sub Family: Papilioninae



*Pachliopta aristolochiae*



*Pachliopta hector*



*Papilio polytes*

## Family: Pieridae Sub Family: Coliadinae



*Catopsilia pomona*



*Catopsilia pyranthe*



*Eurema blanda*



*Eurema andersoni*

## Family: Pieridae Sub Family: Pierinae



*Cepora nerissa*



*Colotis amata*

# PLATE 101: Lepidoptera

## Family: Pieridae Sub Family: Pierinae



*Colotis aurora*



*Colotis danae*



*Suastus gremius*



*Delias eucharis*



*Ixias marianne*



*Ixias pyrene*



*Leptosia nina*



*Pareronia hippia*

---

## Family: Lycaenidae Sub Family: Curetinae



*Curetis thetis*

## Family: Lycaenidae Sub Family: Aphnaeinae



*Spindasis vulcanus*

# PLATE 102: Lepidoptera

## Family: Lycaenidae Sub Family: Polyommatinae



*Azanus jesous*



*Castalius rosimon*



*Catochrysops strabo*



*Euchrysops cnejus*



*Everes lacturnus*



*Freyeria putli*



*Jamides celeno*



*Leptotes plinius*



*Pseudozizeeria maha*



*Zizeeria karsandra*



*Zizina otis*



*Zizula hylax*

# PLATE 103: Lepidoptera

## Family: Nymphalidae Sub Family: Danainae



*Danaus chrysippus*



*Danaus genutia*



*Euploea sylvester coreta*



*Tirumala limniace*



*Tirumala septentrionis*

## Family: Nymphalidae Sub Family: Satyrinae



*Melanitis leda*



*Mycalesis perseus*



*Melanitis phedima varaha*



*Mycalesis mineus*

## Family: Nymphalidae Sub Family: Charaxinae



*Polyura athamas*

## Family: Nymphalidae Sub Family: Morphinae



*Charaxes solon*

# PLATE 104: Lepidoptera

**Family: Nymphalidae**
**Sub Family: Acraeinae**



*Acraea violae*

**Family: Nymphalidae**
**Sub Family: Heliconiinae**



*Phalanta phalantha*

**Family: Nymphalidae**
**Sub Family: Limenitinae**



*Neptis hylas*

**Family: Nymphalidae**
**Sub Family: Cyrestinae**



*Byblia ilithyia*

**Family: Nymphalidae Sub Family: Biblidinae**



*Ariadne ariadne*



*Ariadne merione*

**Family: Nymphalidae Sub Family: Nymphalinae**



*Hypolimnas bolina*



*Hypolimnas misippus*



*Junonia almana*



*Junonia atlites*



*Junonia hierta*



*Junonia iphita*

# PLATE 105: Lepidoptera

## Family: Nymphalidae Sub Family: Nymphalinae



*JUnonia lemonias*



*Junonia orithiya*

---

## Family: Crambidae



*Spoladea recurvalis*

## Family: Erebidae



*Utetheisa pulchelloides*

---

## Family: Lycaenidae Sub Family: Theclinae



*Virachola isocrates*

# PLATE 106: Odonata

## Family: Coenagrionidae



*Agriocnemis femina*



*Ceriagrion coromandelianum*



*Ischnura aurora*



*Ischnura senegalensis*



*Lestes umbrinus*



*Pseudagrion decorum*



*Pseudagrion microcephalum*



*Pseudagrion rubriceps*

## Family: Gomphidae



*Ictinogomphus rapax*



*Paragomphus lineatus*

# PLATE 107: Odonata

## Family: Libellulidae



*Acisoma panorpoides*



*Brachydiplax chalybea*



*Brachythemis contaminata*



*Bradinopyga geminata*



*Crocothemis servilia*



*Diplacodes trivialis*



*Indothemis carnatica*



*Orthetrum luzonicum*



*Orthetrum pruinosum*



*Orthetrum sabina*



*Pantala flavescens*



*Potamarcha congener*

# PLATE 108: Odonata

## Family: Libellulidae



*Rhyothemis variegata*



*Tholymis tillarga*



*Tramea basilaris*



*Tramea limbata*



*Trithemis pallidinervis*



*Urothemis signata*

## Family: Lestidae



*Zyxomma petiolatum*



*Lestes elatus*

# Plate 109: Arachnida



*Argiope anasuja*



*Arctosa sp.,*



*Eratigena agrestis*



*Gasteracantha sp.,*



*Leucauge decorate*



*Lycosa Lycosidae*



*Lycosidae sp.,*



*Pardosa sp.,*



*Peucetia viridana*



*Tetragnatha sp.,*

## Plate 110: Gastropods











# Plate 111: Fishes



*Anabas testudineus*



*Catla catla*



*Channa punctata*



*Channa striata*



*Clarias gariepinus*



*Etroplus suratensis*



*Glossogobius giuris*



*Labeo rohita*



*Lepidocephalichthys thermalis*



*Mystus bleekeri*

# Plate 112: Fishes



*Notopterus notopterus*



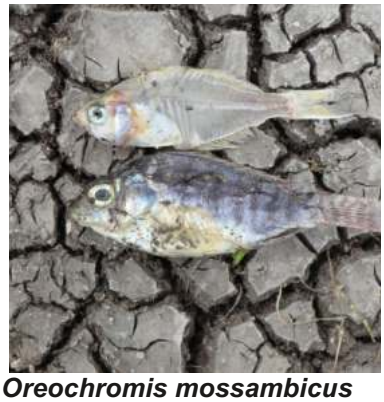
*Parambassis ranga*



*Oreochromis niloticus*



*Oryzias dancena*



*Oreochromis mossambicus*



*Puntius sophore*



**Mudskipper**

# Plate 113: Crustaceans



*Uca perplexa*



*Uca pugnax*



*Uca annulipes*

**Order: Cladocera**
**Family: Daphniidae**



*Daphnia sp.,*

# PLATE 114: Amphibians
## Family: Dicroglossidae



*Euphlyctis cyanophlyctis*



*Euphlyctis hexadactylus*



*Hoplobatrachus tigerinus*



*Euodice malabarica*



*Fejervarya limnocharis*

# PLATE 115: Reptiles



*Calotes versicolor*



*Mabuya carinata*



*Psammophilus dorsalis - Female*



*Psammophilus dorsalis - Male*



*Sitana ponticeriana*



*Daboia russelii*

# PLATE 116: Avifauna
## Family: Phasianidae



*Francolinus pondicerianus*



*Pavo cristatus*

## Family: Anatidae



*Anas acuta*



*Anas clypeata*



*Anas poecilorhyncha*



*Anas querquedula*



*Anser indicus*



*Dendrocygna javanica*



*Nettapus coromandelianus*



*Sarkidiornis melanotos*

# PLATE 117: Avifauna

## Family: Podicipedidae



*Tachybaptus ruficollis*

## Family: Ciconiidae



*Anastomus oscitans*



*Mycteria leucocephala*

## Family: Phoenicopteridae



*Phoenicopterus roseus*

## Family: Threskiornithidae



*Platalea leucorodia*



*Plegadis falcinellus*



*Pseudibis papillosa*



*Threskiornis melanocephalus*

# PLATE 118: Avifauna

## Family: Ardeidae



*Ardea cinerea*



*Ardea purpurea*



*Ardeola grayii*



*Bubulcus ibis*

# PLATE 119: Avifauna

## Family: Ardeidae



*Butorides striata*



*Casmerodius albus*



*Egretta garzetta*



*Ixobrychus sinensis*



*Mesophoyx intermedia*



*Nycticorax nycticorax*

## Family: Pelecanidae



*Pelecanus philippensis*

## Family: Anhingidae

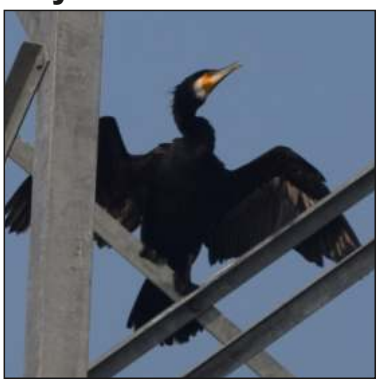


*Anhinga melanogaster*

## Family: Phalacrocoracidae



*Phalacrocorax carbo*



*Phalacrocorax fusicollis*



*Phalacrocorax niger*

# PLATE 120: Avifauna
# Family: Accipitridae



*Accipiter badius*



*Butastur teesa*



*Buteo buteo*



*Circus aeruginosus*



*Circus pygargus*



*Elanus caeruleus*



*Haliastus indus*



*Hieraaetus pennatus*



*Milvus migrans*



*Pandion haliaetus*



*Pernis ptilorhynchus*

# PLATE 121: Avifauna
## Family: Rallidae



*Amaurornis phoenicurus*



*Fulica atra*



*Gallinula chloropus*

## Family: Turnicidae



*Porphyrio porphyrio*



*Porzana pusilla*



*Coturnix coturnix*

## Family: Jacanidae



*Hydrophasianus chirurgus*



*Metopidius indicus*

## Family: Recurvirostridae



*Himantopus himantopus*

## Family: Charadriidae



*Charadrius dubius*



*Vanellus cinereus*



*Vanellus indicus*

# PLATE 122: Avifauna

## Family: Charadriidae



*Vanellus malabaricus*

---

## Family: Scolopacidae



*Calidris minuta*



*Numenius arquata*



*Tringa glareola*



*Tringa nebularia*



*Tringa ochropus*



*Tringa stagnatilis*



*Tringa totanus*

# PLATE 123:

## Family: Laridae



*Chlidonias hybrida*



*Chroicocephalus brunnicephalus*



*Gelochelidon nilotica*



*Hydroprogne caspia*

## Family: Pteroclidae



*Pterocles exustus*

## Family: Columbidae



*Columba livia*



*Stigmatopelia chinensis*



*Stigmatopelia senegalensis*



*Streptopelia decaocto*



*Streptopelia tranquebarica*

# PLATE 124: Avifauna

## Family: Psittacidae



*Psittacula krameri*

## Family: Cuculidae



*Centropus (sinensis) parroti*



*Clamator jacobinus*

## Family: Apodidae



*Cypsiurus balasiensis*

## Family: Upupidae



*Upupa epops*

## Family: Coraciidae



*Coracias benghalensis*

## Family: Alcedinidae



*Alcedo atthis*



*Ceryle rudis*



*Halcyon smyrnensis*

## Family: Meropidae



*Merops orientalis*



*Merops philippinus*

## Family: Tephrodornithidae



*Tephrodornis pondicerianus*

# PLATE 125:

## Family: Artamidae



*Artamus fuscus*

## Family: Laniidae



*Lanius cristatus*

## Family: Dicruridae



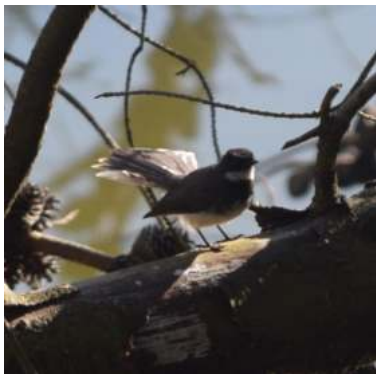
*Dicrurus macrocercus*

## Family: Oriolidae



*Oriolus kundoo*

## Family: Rhipiduridae



*Rhipidura (albicollis) albogularis*

## Family: Monarchidae



*Terpsiphone paradisi*

---

## Family: Corvidae



*Corvus (macrorhynchos) culminatus*



*Corvus splendens*



*Dendrocitta vagabunda*

---

## Family: Paridae



*Parus cinereus*

## Family: Hirundinidae



*Cecropis daurica*



*Hirundo rustica*

# PLATE 126: Avifauna

## Family: Alaudidae



*Alauda gulgula*



*Eremopterix griseus*



*Mirafra affinis*

## Family: Pycnonotidae



*Pycnonotus cafer*



*Pycnonotus jocosus*

## Family: Cisticolidae



*Orthotomus sutorius*



*Prinia inornata*



*Prinia socialis*



*Prinia sylvatica*

# PLATE 127: Avifauna

## Family: Acrocephalidae



*Acrocephalus dumetorum*



*Acrocephalus stentoreus*

## Family: Phylloscopidae



*Phylloscopus trochiloides*

## Family: Timaliinae



*Dumetia hyperythra*



*Turdoides affinis*

## Family: Sturnidae



*Acridotheres tristis*



*Pastor roseus*



*Sturnia pagodarum*

# PLATE 128: Avifauna

## Family: Muscicapidae



*Eumyias albicaudatus*



*Muscicapa dauurica*



*Saxicola caprata*



*Acrocephalus dumetorum*

---

## Family: Stenostiridae



*Culicicapa ceylonensis*

## Family: Dicaeidae



*Dicaeum erythrorhynchos*

## Family: Nectariniidae



*Cinnyris asiaticus*



*Leptocoma zeylonica*

# PLATE 129: Avifauna

## Family: Passeridae



*Gymnoris xanthocollis*



*Passer domesticus*

## Family: Ploceidae



*Ploceus manyar*



*Ploceus philippinus*

## Family: Estrildidae



*Euodice malabarica*



*Lonchura malacca*



*Lonchura punctulata*

## Family: Motacillidae



*Anthus rufulus*



*Motacilla alba*



*Motacilla flava*



*Motacilla maderaspatensis*

# Plate 130: Mammals

## Family: Bovidae



*Axis axis*



*Bubalus bubalis*



*Bos taurus*



*Capra aegagrus hircus*

## Family: Canidae



*Canis lupus familiaris*

## Family: Canidae



*Macaca radiata*

# Plate 131: Mammals

## Family: Equidae



*Equus ferus caballus*

## Family: Felidae



*Felis catus*

## Family: Herpestidae



*Herpestes edwardsi*

## Family: Muridae



*Bandicota indica*

## Family: Sciuridae



*Funambulus palmarum*

## Family: Suidae



*Sus scrofa domesticus*



*Sus scrofa*

# Plate 132: Wetland Temple



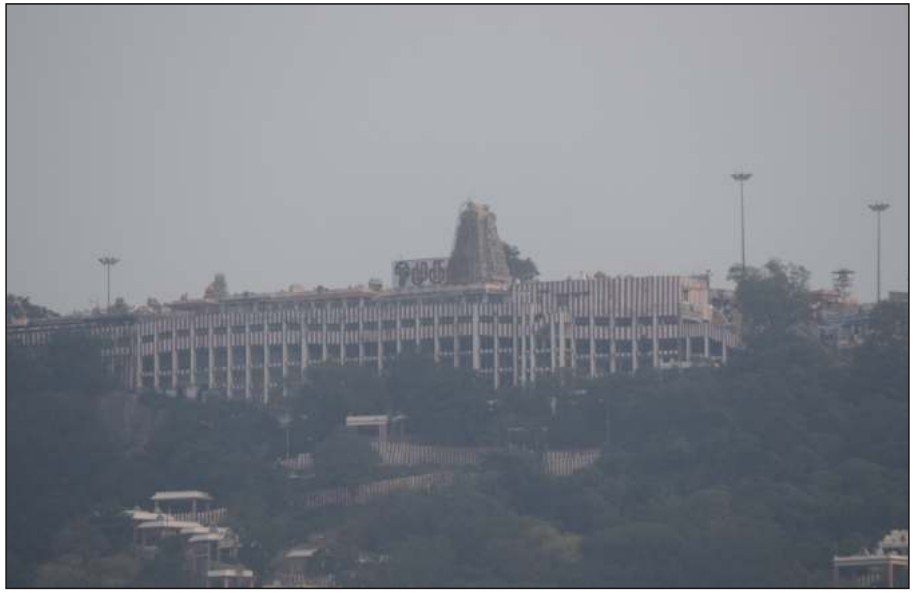
Elandaikudam Lake - Ariyalur



Kovaipudur Lake - Coimbatore



Idumban Kulam - Dindigul



Vaiyapuri tank - Dindigul

# Plate 133: Wetland Temple



Vellode Bird Sanctuary - Erode



Govindavadi Lake - Kancheepuram



Great Salt Lake - Kancheepuram



Sriperumbudur Lake - Kancheepuram

## Plate 134: Wetland Temple



Amirthasagaram Lake - Namakkal



Uthirakosamangai Lake - Ramanathapuram



Rajasingamangalam Lake - Ramanathapuram



Vettangudi Bird Sanctuary - Sivagangai

# Plate 135: Wetland Temple



Vadamaneri Lake - Salem



Vettangudi Bird Sanctuary - Sivagangai



Periyakulam Kanmai - Theni



Puthukulam - Tirunelveli

## Plate 136: Wetland Temple



Kongur Idachi Kulam - Tirupur



Koolipalayam Lake - Tirupur



Padur-Thangal Eri - Tiruvallur



Kaveripakkam Lake - Vellore

## Plate 137: Wetland Temple



**Periyakulam Kanmai (Srivilliputhur) - Virudhunagar**

# PLATE 138: Bird Poaching



Anakavoor Lake - Tiruvannamalai



Kallaperambur Lake - Thanjavur



Karungulam - Thoothukudi



Keeran Lake - Nagapattinam



Koothappar Big tank - Tiruchirappalli



Pongoundapara Lake - Krishnagiri



T. Kunnathur - Madurai

# Plate 139: Human Uses of Wetlands



Encroachment and solid waste dumping



Agriculture inside the wetland banks



Eutrophication and Encroachment in the wetland



Burning of solid waste along the wetland bunds

# Plate 140: Human Uses of Wetlands



Scavenging in the wetlands



Sewage release



Partying along the wetlands



Crematorium along the wetland banks

# Plate 141: Human Uses of Wetlands



Recreational and boating activities




Sand mining





Garbage mounds inside the wetland

# Plate 142: Human Uses of Wetlands



High tension wires crossing the wetland



Park along the wetland



Washing cattle



Washing clothes

# Plate 143: Livelihood



Fishing



Agriculture inside the wetland banks



Cutting fuel wood



Grazing

# Plate 144:



Salt pans



Drinking water

# PLATE 145: Field Photos



Amirthasagaram Lake



Andakudi Lake



Arumbavur Big Lake



Great Salt Lake

# PLATE 146: Field Photos



Kadagathur Lake



Kodaikanal Lake



Kolavai Lake



Kongur Idachi Kulam

# PLATE 147: Field Photos



Koolipalayam Lake



Kovaipudur Lake



Kurichi Lake



Madhuranthakam Lake

# PLATE 148: Field Photos



Muthaliyarkuppam Lake




Panamarathupatti Eri



Pulicat Lake



Sandapet Lake

# PLATE 149: Field Photos



Thamaraikulam Kanmai



Thirupulivanam lake



Uthiramerur Lake



Vellode Bird Sanctuary

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