

3.41. GULF OF MANNAR MARINE BIOSPHERE RESERVE

❖ **State / Union Territory:** Tamil Nadu

❖ **Name and address of person (s) compiling this information:**

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Section 1: Identification, Location and Jurisdiction

- 1.1 *Name of the Wetland:* Gulf of Mannar Biosphere Reserve or Gulf of Mannar Marine National Park
- 1.2 *Name of the Village (s), Tehsil (s), Municipal area (s):* Rameswaram, Mandapam, Pamban, Kothandaramar Kovil, Vembar, Kilakarai
- 1.3 *Name of the District (s) in which Wetlands complex located:* Ramanathapuram
- 1.4 *Geographical coordinates:*
 - ▶ Latitude: 9°6'57" N
 - ▶ Longitude: 78°47'12" E
- 1.5 *Name of the Department/ Agency which has jurisdiction over Wetland/ Wetland complex:* Forest Department

Section 2: Site Characteristics

- 2.1 *Area of Wetland:* 43.78 ha
- 2.2 *Wetland type:*

Category	Subcategory
☐ Natural (Inland)	☐ Permanent lakes ☐ Seasonal/ intermittent lakes ☐ Permanent streams/ creeks ☐ Seasonal/ intermittent streams/ creeks ☐ Oxbow ☐ River floodplain ☐ Permanent freshwater marshes ☐ Seasonal/ intermittent freshwater marshes ☐ Shrub-dominated Wetlands ☐ Tree-dominated Wetlands ☐ Geothermal Wetlands

	☐ Karst and other subterranean hydrological systems
✓ Natural (Coastal)	☐ Coastal lagoon ✓ Estuary ☐ Intertidal mud, sand or salt flats ✓ Mangroves ✓ Coral reefs
☐ Human-made	☐ Aquaculture pond ☐ Tank ☐ Saltpan ☐ Dam/ Reservoir

2.1 *Depth (m):* Average - 5; Maximum - 7

2.2 *Elevation (m above mean sea level):* 0

2.3 *Water regimes*

a) Main source of water

- ✓ Rainfall inflow from river
- ☐ Groundwater
- ☐ Catchment runoff
- ☐ Direct/ indirect inflow from river
- ✓ Others, please specify: receives water from Bay of Bengal
- ☐ Name of River/ Canal System

b) Water performance

- ✓ Mostly permanent
- ☐ Mostly intermittent

c) Destination of water from Wetland

- ✓ Feeds groundwater river to sea
- ☐ To downstream catchment

d) Water pH

- ☐ Acid (< 5.5)
- ☐ Circumneutral (5.5-7.4)
- ✓ Alkaline (> 7.4)

e) Water salinity

- ☐ Fresh (< 0.5 g/l)
- ☐ Brackish (0.5-30 g/l)
- ✓ Euhaline (30-40 g/l)
- ☐ Hypersaline (> 40 g/l)
- ☐ Not known

- f) Nutrients in water
- ☐ Eutrophic
 - ✓ Mesotrophic
 - ☐ Oligotrophic
 - ☐ Not known

2.4 *Climatic setting*

- a) Annual rainfall/ Snowfall (mm): 70.6
 b) Temperature (°C) Minimum 26.65 ; Maximum 34.45
 c) Humidity (%) Minimum 75.3 ; Maximum 80.8

2.5 *Area of zone of influence (in ha):* 728.37 ha (with an irregular radius of 1.57 km)

2.6 *Major land use within zone of influence*

Land Use	Percentage
Forest	: 0%
Vegetation (Plantation)	: 15%
Agriculture	: 0%
Settlements (Rural)	: 0%
Settlements (Urban)	: 0%
Industrial	: 0%
Waterbody	: 85%

2.7 *Map of Wetland complex and zone of influence:* Enclosed as Annexure 3.41 (Fig.3. 41.1-3.41.2)

Section 3: Biodiversity

- 3.1 *Notable plant species present in Wetland:* The Wetland is home to a diverse range of plant species, totaling 64 species. (refer to Table 3.41.1 in Annexure 3.41).
- 3.2 *Notable animal species present in Wetland:* The Wetland supports a variety of animal species, with a total of 205 recorded species. This includes 9 mammal species, 21 reptile species, 9 amphibian species, 153 bird species, and 13 species of butterflies (refer to Table 3.41.2-3.41.3 in Annexure 3.41).
- 3.3 *Species of conservation significance:* Highlighted in Table 3.41.1-3.41.3
- 3.4 *Major plant invasive alien species:* The Wetland supports 8 plant invasive species (refer to Table 3.41.4 in Annexure 3.41).
- 3.5 *Major animal invasive alien species:* The Wetland supports 3 animal invasive species (refer to Table 3.41.5 in Annexure 3.41).

Section 4: Ecosystem Services

Importance	Relevance	Details
Source of drinking water for people living and around	☐ Yes ☒ No	
Source of water for agriculture	☐ Yes ☒ No	
Fisheries	☒ Yes ☐ No	Communal fishing activity is happening
Cultivation of aquatic food plants	☐ Yes ☒ No	
For buffalo wallowing and use of domesticated animals	☐ Yes ☒ No	
Medicinal plants	☐ Yes ☒ No	Few Medicinal plants around the Wetland. Which is listed in Table 3.41.6 in Annexure 3.41
Is a recreational site	☒ Yes ☐ No	By the mode of boating and tourism
Buffering communities from extreme events as floods and storms	☐ Yes ☒ No	
Groundwater recharge	☐ Yes ☒ No	
Water purification	☐ Yes ☒ No	
Acts as a sink for sediments	☒ Yes ☐ No	
Has significant cultural and religious values	☒ Yes ☐ No	
Is a site for recreation and tourism	☒ Yes ☐ No	Significant amount of population is exploring the tourism
Supports noteworthy plants species	☐ Yes ☒ No	
Support noteworthy animal species	☐ Yes ☒ No	

Site of high congregation of migratory water birds	☒ Yes ☐ No	Provides a suitable site for the high congregation of migratory water birds
Supports life cycle of fish or amphibians	☒ Yes ☐ No	
Mining	☐ Yes ☒ No	
Carbon Sequestration	☒ Yes ☐ No	Mangrove plantation leads to carbon sequestration

Section 5: Pre-Existing Rights and Privileges

Nature of right and privilege	Relevant for the site	Does this negatively impact the Wetland's ecological health?	Brief description
Community Fishing (without any lease or permission from government department)	☒ Yes ☐ No	☐ Yes ☐ No ☒ Not assessed	Communal fishing activity is happening
Fishing under lease from government department	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	
Harvest of plants (without any lease or permission from government department)	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	
Harvest of plants under lease from government department	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	
Agriculture or horticulture within Wetland	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	
Grazing	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	
Religious practices	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	

Withdrawal of water for domestic use	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	
Withdrawal of water for agriculture or fisheries	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	
Bathing or wallowing of domestic animals	☐ Yes ☒ No	☐ Yes ☐ No ☐ Not assessed	
Plying of boats	☒ Yes ☐ No	☐ Yes ☐ No ☒ Not assessed	Recreation purpose
Any other	☐ Yes ☐ No	☐ Yes ☐ No ☐ Not assessed	

Section 6: Present and Potential Threats

Threat	Degree	Present/ Potential	Additional info.
Changes in water inflow and outflow	☐ High ☐ Medium ☐ Low	☐ Present ☐ Potential	
Pollution	☐ High ☐ Medium ☐ Low	☐ Present ☐ Potential	
Unsustainable harvest of biological resources	☐ High ☐ Medium ☐ Low	☐ Present ☐ Potential	
Mining	☐ High ☐ Medium ☐ Low	☐ Present ☐ Potential	
Siltation	☐ High ☐ Medium ☐ Low	☐ Present ☐ Potential	
Encroachment	☐ High ☐ Medium	☒ Present ☐ Potential	Illegally fishing communities were staying inside island

	☒ Low		
Spread of invasive species	☐ High ☐ Medium ☒ Low	☒ Present ☐ Potential	Listed in Table 3.41.4-3.41.5 in Annexure 3.41
Any others	☐ High ☐ Medium ☐ Low	☐ Present ☐ Potential	

Section 7: Activities Proposed to Be Prohibited (other than those listed in Rule 4 (2) of Wetlands Rules and Regulated

Activity	Whether prohibited or regulated	Regulation within Wetlands zone of influence	If regulated indicates the level of regulation	Name of department/ agency responsible for regulation/ prohibition	Additional info.
Withdrawal of water / impoundment/diversion or any other hydrological intervention		☐ Wetland/ Wetland complex boundary ☐ Zone of influence			
Harvesting of resources (living / non-living)		☐ Wetland/ Wetland complex boundary ☐ Zone of influence			
Grazing		☐ Wetland/ Wetland complex boundary ☐ Zone of influence			
Discharge of treated sewage/ effluent / wastewater		☐ Wetland/ Wetland complex boundary ☐ Zone of influence			

Construction of boat jetties, and facilities for temporary use, as pantoon bridges		☒ Wetland/ Wetland complex boundary ☐ Zone of influence			Wood boat jetties is present
Aquaculture, agriculture and horticulture activities within the Wetland boundaries.		☐ Wetland/ Wetland complex boundary ☐ Zone of influence			
Any others		☐ Wetland/ Wetland complex boundary ☐ Zone of influence			

Section 8: Activities Proposed to be permitted

Activity	Relevance	Within Wetlands or zone of influence	Additional info.
		☐ Wetland/ Wetlands complex boundary ☐ Zone of influence	

Section 9: Listing of Available Scientific Resources Used

1. Ali, S. (2002). *The book of Indian birds* (13th Revised Edition). Oxford University Press, New Delhi.
2. Gamble, J.S., & Fischer, C.E.C. (1915–1935). *Flora of the Presidency of Madras*. Adlard and Son, London.
3. Henry, A.N., Chithra, V.N., & Balakrishnan, P. (1989). *Flora of Tamil Nadu, India*. Series 1: Analysis, Vol. III. Botanical Survey of India, Coimbatore.
4. Kamalakannan, M., & Nameer, P.O. (2019). A checklist of mammals of Tamil Nadu, India. *Journal of Threatened Taxa*, 11(8), 13992–14009. <https://doi.org/10.11609/jott.4705.11.8.13992-14009>
5. Kehimkar, I. (2008). *The book of Indian butterflies*. Bombay Natural History Society.
6. Mathew, K.M. (1981). *The material for the flora of the Tamilnadu Carnatic*. Madras, India.

7. Mathew, K.M. (1982). *Illustrations on the flora of the Tamilnadu Carnatic* (Vol. II). The Diocesan Press, Madras, India.
8. Mathew, K.M. (1983). *The flora of Tamilnadu Carnatic* (Vol. III). The Diocesan Press, Madras, India.
9. Mathew, K.M. (1988). *Further illustrations on the flora of the Tamilnadu Carnatic* (Vol. IV). The Diocesan Press, Madras, India.
10. Nair, N.C., & Henry, A.N. (1983). *Flora of Tamil Nadu, India*. Series 1, Vol. 1. Botanical Survey of India, Southern Circle, Coimbatore.
11. Ratnam, K. *Birds of Tamil Nadu*.

ANNEXURE 3.41

Fig 3.41.1. Zone of Influence of Gulf of Mannar Wetland

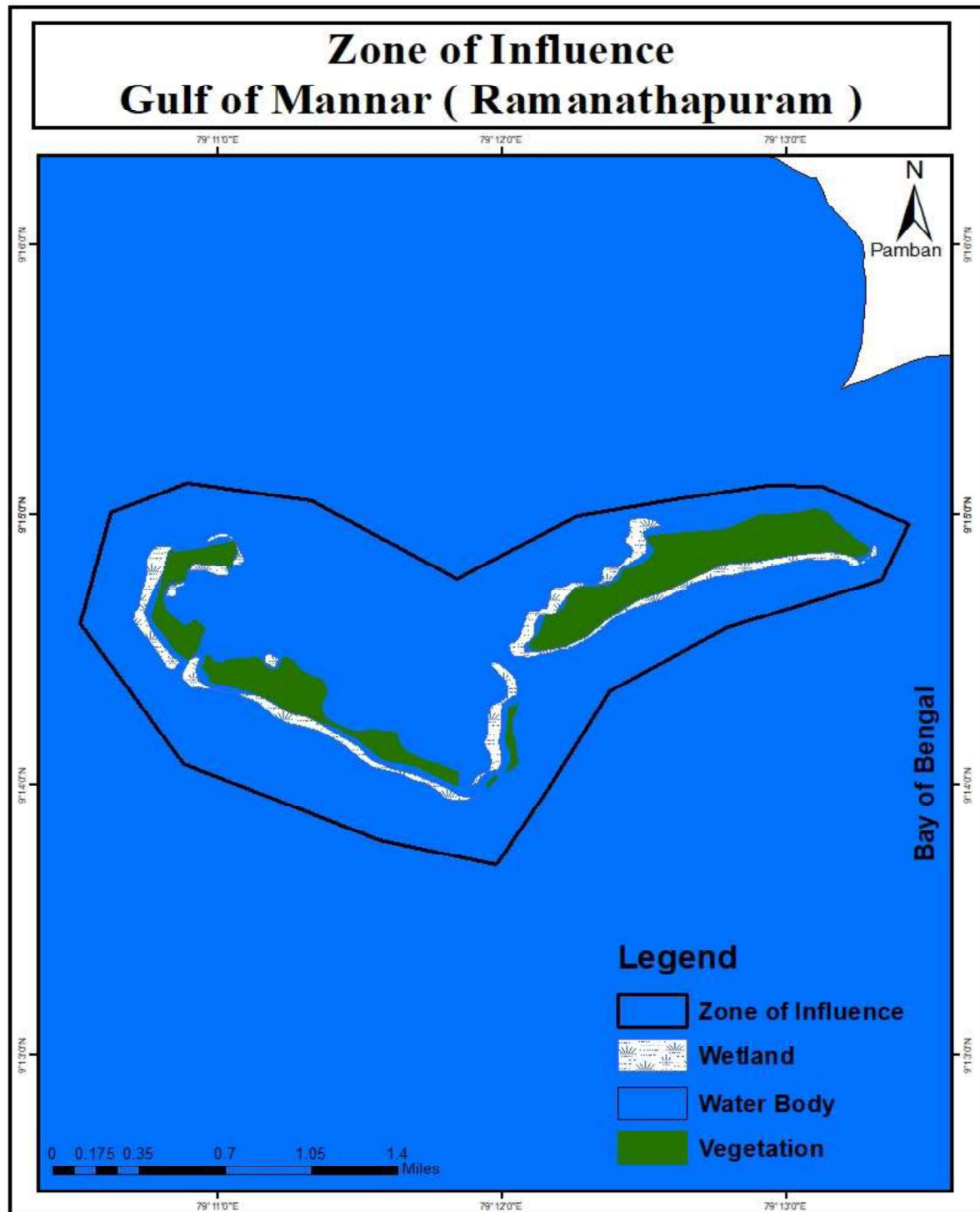


Fig. 3.41.2. Map (2014 vs. 2024) and Land Use/ Land Cover of Gulf of Mannar Wetland

Map of the Wetland in 2014



Map of the Wetland in 2024



Land Use/ Land Cover of the Wetland

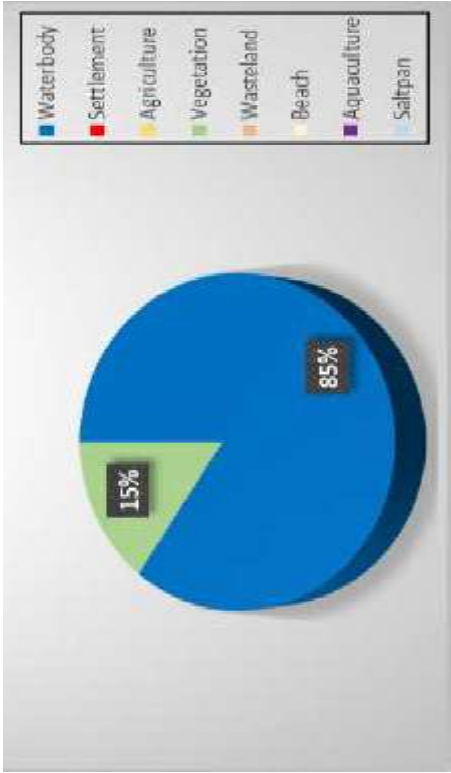


Table 3.41.1. IUCN Status of Floral Species in Gulf of Mannar Wetland

S. No.	Scientific Name of the Species	Family	Tamil Name	Habit	IUCN
1.	<i>Abrus precatorius</i>	Fabaceae	Kundumani	Climber	NE
2.	<i>Abutilon indicum</i>	Malvaceae	Thuthi	Shrub	LC
3.	<i>Acalypha indica</i>	Euphorbiaceae	Kuppaimeni	Herb	NE
4.	<i>Acanthospermum hispidum</i>	Compositae		Herb	NE
5.	<i>Achyranthes aspera</i>	Amaranthaceae	Nayurivi	Herb	NE
6.	<i>Aerva lanata</i>	Amaranthaceae	Peelai, Sirupeelai	Herb	NE
7.	<i>Aeschynomene indica</i>	Fabaceae	Kothiram	Herb	NE
8.	<i>Aeluropus lagopoides</i>	Poaceae	Kadal Arugampullu	Grass	NE
9.	<i>Borassus flabellifer</i>	Arecaceae	Panai	Tree	LC
10.	<i>Boerhavia diffusa</i>	Nyctaginaceae	Mookarattai	Herb	NE
11.	<i>Brachiaria mutica</i>	Poaceae		Grass	NE
12.	<i>Calotropis gigantea</i>	Asclepiadaceae	Erukku, Arkkam	Shrub	NE
13.	<i>Cardiospermum halicacabum</i>	Sapindaceae	Mudakotthan	Herb	NE
14.	<i>Chloris barbata</i>	Poaceae	Kodaipul	Grass	NE
15.	<i>Cleome viscosa</i>	Capparidaceae	Nai vaelai	Herb	NE
16.	<i>Corchorus capsularis</i>	Tiliaceae	Sanal	Herb	NE
17.	<i>Cynodon dactylon</i>	Poaceae	Aruhampul	Grass	NE
18.	<i>Cyperus alternifolius</i>	Cyperaceae		Sedge	NE
19.	<i>Cyperus squarrosus</i>	Cyperaceae		Sedge	NE
20.	<i>Datura metal</i>	Solanaceae	Karu Oomatthai	Herb	NE
21.	<i>Digitaria ciliaris</i>	Poaceae		Grass	NE
22.	<i>Emilia sonchifolia</i>	Astereceae	Muyalccevi	Herb	NE
23.	<i>Eragrostis viscosa</i>	Poaceae	-	Grass	LC
24.	<i>Geniosporum tenuiflorum</i>	Laminaceae	Nallathulasi	Herb	NE
25.	<i>Gisekia pharnaceoides</i>	Gisekiaceae	Kolikkirai	Herb	NE

26.	<i>Glinus lotoides</i>	Molluginaceae	Cerupattai	Herb	NE
27.	<i>Glinus oppositifolius</i>	Molluginaceae	Thurapundu	Herb	NE
28.	<i>Heliotropium curassavicum</i>	Boraginaceae		Herb	LC
29.	<i>Ipomoea carnea</i>	Convolvulaceae		Shrub	NE
30.	<i>Ipomoea pes-caprae</i>	Convolvulaceae	Attukkal	Climber	LC
31.	<i>Ischaemum indicum</i>	Poaceae	-	Grass	LC
32.	<i>Jatropha gossypifolia</i>	Euphorbiaceae	Kaatu-amanakku	Shrub	NE
33.	<i>Justicia prostrata</i>	Acanthaceae		Herb	NE
34.	<i>Launaea bellidifolia</i>	Asteraceae		Herb	LC
35.	<i>Lantana camara</i>	Verbenaceae	Unnichedi	Shrub	LC
36.	<i>Lepisanthes tetraphylla</i>	Sapindaceae	Neykkoddaan	Tree	LC
37.	<i>Martynia annua</i>	Martyniaceae	Thael Kodukku	Herb	NE
38.	<i>Mollugo cerviana</i>	Molluginaceae	Parpaadagam	Herb	NE
39.	<i>Mukia leiosperma</i>	Cucurbitaceae		Climber	NE
40.	<i>Parthenium hysterophorus</i>	Compositae	Vishachedi	Herb	LC
41.	<i>Passiflora foetida</i>	Passifloraceae	Poonaipidukku	Climber	NE
42.	<i>Pedaliium murex</i>	Pedaliaceae		Herb	NE
43.	<i>Phyllanthus reticulatus</i>	Euphorbiaceae	Inki pazham	Shrub	LC
44.	<i>Prosopis cineraria</i>	Fabaceae	Vani	Tree	LC
45.	<i>Prosopis julifera</i>	Fabaceae	Semai karuvel	Tree	LC
46.	<i>Salacia chinensis</i>	Celastraceae		Tree	LC
47.	<i>Salvadora persica</i>	Salvadaraceae	Peruvilla	Tree	LC
48.	<i>Salicornia brachiata</i>	Chenopodiaceae	Kattumari	Herb	LC
49.	<i>Senna occidentalis</i>	Caesalpiniaceae	Thagarai	Shrub	NE
50.	<i>Senna siamea</i>	Fabaceae		Tree	LC
51.	<i>Senna tora</i>	Caesalpiniaceae	Oosi thagarai	Herb	NE
52.	<i>Solanum trilobatum</i>	Solanaceae	Thoodhuvalai	Herb	NE

53.	<i>Spermacoce hispida</i>	Rubiaceae	Nathaichoori	Herb	NE
54.	<i>Sphaeranthus amaranthoides</i>	Compositae	Siva karandhai	Herb	LC
55.	<i>Suaeda maritima</i>	Amaranthaceae		Herb	LC
56.	<i>Tephrosia purpurea</i>	Fabaceae	Kozhinji	Herb	NE
57.	<i>Thespesia populnea</i>	Malvaceae	Poovarasu	Tree	LC
58.	<i>Tinospora cordifolia</i>	Menispermaceae	Seendhil	Climber	NE
59.	<i>Trachys muricata</i>	Poaceae	-	Grass	LC
60.	<i>Trianthema portulacastrum</i>	Aizoaceae		Herb	NE
61.	<i>Tridax procumbens</i>	Compositae	Vettukkaaya poondu	Herb	LC
62.	<i>Tylophora indica</i>	Asclepiadaceae	Naippalai	Climber	NE
63.	<i>Typha angustifolia</i>	Typhaceae	Sambu	Herb	LC
64.	<i>Xanthium indicum</i>	Compositae	Marul oomatham	Herb	LC

Table 3.41.2. IUCN Status of Selected Fauna Species in Gulf of Mannar Wetland

S. No.	Scientific Name of the Species	Family	Common Name	IUCN	Present study
<i>A. Mammal</i>					
1.	<i>Antilope cervicapra</i>	Bovidae	Blackbuck	NT	*
2.	<i>Bandicota bengalensis</i>	Muridae	Bandicoot	LC	
3.	<i>Canis aureus</i>	Canidae	Golden Jackal	LC	
4.	<i>Canis aureus</i>	Canidae	Jackal	LC	
5.	<i>Funambulus palmarum</i>	Sciuridae	Three-striped palm squirrel	LC	*
6.	<i>Macaca radiate</i>	Cercopithecidae	Bonnet macaque	LC	*
7.	<i>Pipistrellus coromandra</i>	Vespertilionidae	Indian pipistrelle	LC	
8.	<i>Rattus rattus</i>	Muridae	House rat	LC	*
9.	<i>Urva edwardsii</i>	Herpestidae	Indian grey mongoose	LC	*

<i>B. Reptile</i>					
1.	<i>Calotes versicolor</i>	Agamidae	Garden lizard	LC	*
2.	<i>Sitana ponticeriana</i>	Agamidae	Fan-throated lizard	LC	*
3.	<i>Mabuya carinata</i>	Scincidae	Common skink	LC	
4.	<i>Lygosoma punctate</i>	Scincidae	Garden skink	LC	
5.	<i>Lygosoma albopunctata</i>	Scincidae	White-spotted garden skink	LC	
6.	<i>Varanus bengalensis</i>	Varanidae	Indian monitor lizard	NT	*
7.	<i>Hemidactylus brookii</i>	Gekkonidae	Spotted gecko	LC	
8.	<i>Hemidactylus triedrus</i>	Gekkonidae	Termite-hill gecko	LC	
9.	<i>Hemidactylus frenatus</i>	Gekkonidae	House gecko	LC	*
10.	<i>Hemidactylus leschenaultia</i>	Gekkonidae	Bark gecko	LC	
11.	<i>Ramphotyphlops braminus</i>	Typhlopidae	Blind snake	LC	
12.	<i>Amphiesma stolata</i>	Colubridae	Striped keel back	NE	
13.	<i>Atretium schistosum</i>	Colubridae	Olive keel back	LC	
14.	<i>Xenochrophis piscator</i>	Colubridae	Checkered keel back	LC	
15.	<i>Ptyas mucosus</i>	Colubridae	Rat snake	NE	*
16.	<i>Ahaetulla nasuta</i>	Colubridae	Green vine snake	LC	*
17.	<i>Naja naja</i>	Elapidae	Cobra	LC	
18.	<i>Bungarus caeruleus</i>	Elapidae	Krait	LC	
19.	<i>Vipera russelli</i>	Viperidae	Russell's viper	LC	
20.	<i>Melanocheilus trijuga</i>	Geoemydidae	Pond turtle	LC	
21.	<i>Lissemys punctata</i>	Trionychidae	Falps shell	VU	

C. Amphibian					
1.	<i>Euphlyctis hexadactylus</i>	Dicroglossidae	Indian pond frog	LC	*
2.	<i>Euphlyctis cynophlyctis</i>	Dicroglossidae	Skipper	LC	*
3.	<i>Sphaerotheca rolandae</i>	Dicroglossidae	Burrowing frog	LC	
4.	<i>Hoplobatrachus crassus</i>	Dicroglossidae	Jerdon's bull frog	LC	
5.	<i>Limnonectes limnocharis</i>	Dicroglossidae	Paddy Field frog	LC	
6.	<i>Uperodon taprobanicus</i>	Microhylidae	Painted frog	LC	*
7.	<i>Ramanella variegata</i>	Microhylidae	Marbled frog	LC	
8.	<i>Duttaphrynus melanostictus</i>	Bufonidae	Indian Toad	LC	*
9.	<i>Polypedates maculatus</i>	Rhacophoridae	Common tree frog	LC	*
D. Butterfly					
1.	<i>Euploea core</i>	Nymphalidae	Common crow	LC	*
2.	<i>Catopsilia pomona</i>	Pieridae	Common Emigrant	NE	*
3.	<i>Melanitis leda</i>	Nymphalidae	Common evening brown	LC	*
4.	<i>Eurema hecabe</i>	Pieridae	Common grass yellow	LC	*
5.	<i>Papilio demoleus</i>	Papilionidae	Common lime	NE	*
6.	<i>Papilio polytes</i>	Papilionidae	Common mormon	NE	*
7.	<i>Junonia lemonias</i>	Nymphalidae	Lemon pansy	NE	*
8.	<i>Catopsilia pyranthe</i>	Pieridae	Mottled Emigrant	NE	*
9.	<i>Pseudozizeeria maha</i>	Lycaenidae	Pale Grass Blue	NE	*
10.	<i>Junonia almana</i>	Nymphalidae	Peacock pansy	LC	*

11.	<i>Danaus chrysippus</i>	Nymphalidae	Plain tiger	LC	*
12.	<i>Acraea violae</i>	Nymphalidae	Tawny coster	LC	*
13.	<i>Pachliopta aristolochiae</i>	Papilionidae	Common Rose	NE	*

LC – Least Concern; * - Yes

Table 3.41.3. IUCN Status of Bird Species in Gulf of Mannar Wetland

S. No.	Scientific Name of the Species	Common name	Habitat	IUCN	PS
1.	<i>Accipiter badius</i>	Shikra	T	LC	*
2.	<i>Acridotheres tristis</i>	Common Myna	T	LC	*
3.	<i>Acrocephalus dumetorum</i>	Blyth's Reed Warbler	T	LC	
4.	<i>Actitis hypoleucos</i>	Common Sandpiper	A	LC	
5.	<i>Aegithina tiphia</i>	Common Iora	T	LC	
6.	<i>Alauda gulgula</i>	Oriental Skylark	T	LC	
7.	<i>Alcedo atthis</i>	Common Kingfisher	T	LC	*
8.	<i>Amaurornis phoenicurus</i>	White-breasted Waterhen	A	LC	
9.	<i>Anas acuta</i>	Northern Pintail	A	LC	
10.	<i>Anas clypeata</i>	Northern Shoveller	A	LC	
11.	<i>Anas crecca</i>	Common Teal	A	LC	*
12.	<i>Anas penelope</i>	Eurasian Wigeon	A	LC	
13.	<i>Anas poecilorhyncha</i>	Spot-billed Duck	A	LC	
14.	<i>Anas querquedula</i>	Garganey	A	LC	
15.	<i>Anastomus oscitans</i>	Asian Openbill	A	LC	*
16.	<i>Anous tenuirostris</i>	Lesser noddy	A	LC	
17.	<i>Anhinga melanogaster</i>	Darter	A	LC	
18.	<i>Anthus godlewskii</i>	Blyth's Pipit	T	LC	
19.	<i>Anthus richardi</i>	Richard's Pipit	D	LC	
20.	<i>Anthus rufulus</i>	Paddy-field Pipit	D	LC	*
21.	<i>Apus affinis</i>	House Swift	T	LC	
22.	<i>Arenaria interpres</i>	Ruddy turn stone	A	LC	
23.	<i>Ardea cinerea</i>	Grey Heron	A	LC	*
24.	<i>Ardea purpurea</i>	Purple Heron	A	LC	

25.	<i>Ardeola grayii</i>	Indian Pond Heron	A	LC	*
26.	<i>Artamus fuscus</i>	Ashy Woodswallow	T	LC	
27.	<i>Athene brama</i>	Spotted Owlet	T	LC	*
28.	<i>Bubulcus ibis</i>	Cattle Egret	D	LC	*
29.	<i>Burhinus oedicephalus</i>	Eurasian Thick-knee	A	LC	
30.	<i>Burhinus recurvirostris</i>	Great Thick-knee	A	LC	
31.	<i>Burhinus oedicephalus</i>	Stone Curlew	A	LC	
32.	<i>Buteo buteo</i>	White-eyed Buzzard	T	LC	
33.	<i>Buteo buteo</i>	Common Buzzard	T	LC	
34.	<i>Butorides striatus</i>	Little Green Heron	A	LC	
35.	<i>Cacomantis passerinus</i>	Indian Plaintive Cuckoo	T	LC	
36.	<i>Calidris acuminata</i>	Sharp-tailed sandpiper	A	LC	
37.	<i>Calidris alpina</i>	Dunlin	A	LC	
38.	<i>Calidris canutus</i>	Red knot	A	LC	
39.	<i>Calidris ferruginea</i>	Curlew sandpiper	A	LC	
40.	<i>Calidris pugnax</i>	Ruf	A	LC	
41.	<i>Calidris melanotos</i>	Pectoral sandpiper	A	LC	
42.	<i>Calidris minuta</i>	Little Stint	A	LC	*
43.	<i>Calidris tenuirostris</i>	Great Knot	A	LC	
44.	<i>Calidris temminckii</i>	Temminck's stint	A	LC	
45.	<i>Caprimulgus indicus</i>	Indian Jungle Nightjar	T	LC	
46.	<i>Casmerodius albus</i>	Great Egret	A	LC	
47.	<i>Centropus sinensis</i>	Greater Coucal	T	LC	
48.	<i>Ceryle rudis</i>	Pied Kingfisher	D	LC	*
49.	<i>Charadrius alexandrinus</i>	Kentish Plover	A	LC	
50.	<i>Charadrius dubius</i>	Little Ringed Plover	A	LC	
51.	<i>Chlidonias hybridus</i>	Whiskered Tern	A	LC	
52.	<i>Chlidonias leucopterus</i>	White-winged Tern	A	LC	
53.	<i>Chroicocephalus brunnicephalus</i>	Brown-headed Gull	A	LC	
54.	<i>Chroicocephalus genei</i>	Slender-billed Gull	T	LC	

55.	<i>Chroicocephalus ridibundus</i>	Black-headed gull	A	LC	
56.	<i>Ciconia episcopus</i>	Woolly-necked Stork	A	LC	
57.	<i>Circus aeruginosus</i>	Eurasian Marsh Harrier	D	LC	
58.	<i>Circus macrourus</i>	Pallid Harrier	T	LC	
59.	<i>Circus melanoleucos</i>	Pied Harrier	T	LC	
60.	<i>Cisticola juncidis</i>	Zitting Cisticola	T	LC	
61.	<i>Clamator jacobinus</i>	Pied Cuckoo	T	LC	
62.	<i>Columba livia</i>	Rock Pigeon	T	LC	
63.	<i>Copsychus saularis</i>	Oriental Magpie Robin	T	LC	
64.	<i>Coracias benghalensis</i>	Indian Roller	T	LC	*
65.	<i>Corvus macrorhynchos</i>	Large-billed Crow	T	LC	*
66.	<i>Corvus splendens</i>	House Crow	T	LC	*
67.	<i>Cypsiurus balasiensis</i>	Asian Palm Swift	T	LC	*
68.	<i>Dendrocitta vagabunda</i>	Rufous Treepie	T	LC	*
69.	<i>Dendronanthus indicus</i>	Forest Wagtail	T	LC	
70.	<i>Dicrurus adsimilis</i>	Black Drongo	T	LC	*
71.	<i>Dupetor flavicollis</i>	Black Bittern	A	LC	
72.	<i>Egretta garzetta</i>	Little Egret	A	LC	*
73.	<i>Elanus caeruleus</i>	Black-shouldered Kite	T	LC	*
74.	<i>Eremopterix grisea</i>	Ashy-crowned Sparrow Lark	T	LC	
75.	<i>Esacus recurvirostris</i>	Great stone-curlew	A	LC	
76.	<i>Eudynamys scolopacea</i>	Asian Koel	T	LC	*
77.	<i>Falco tinnunculus</i>	Common Kestrel	T	LC	
78.	<i>Francolinus pondicerianus</i>	Grey Francolin	T	LC	*
79.	<i>Fulica atra</i>	Coot	A	LC	
80.	<i>Glareola lactea</i>	Small pratincole	T	LC	
81.	<i>Gallicrex cinerea</i>	Watercock	A	LC	
82.	<i>Gallinula chloropus</i>	Common Moorhen	A	LC	*
83.	<i>Gelochelidon nilotica</i>	Gull-billed Tern	A	LC	
84.	<i>Glareola maldivarum</i>	Oriental Pratincole	A	LC	

85.	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	D	LC	*
86.	<i>Haliastur indus</i>	Brahminy Kite	T	LC	*
87.	<i>Hierococcyx varius</i>	Common Hawk Cuckoo	T	LC	
88.	<i>Himantopus himantopus</i>	Black-winged Stilt	A	LC	
89.	<i>Hirundo rustica</i>	Barn Swallow	T	LC	
90.	<i>Hirundo smithii</i>	Wire-tailed Swallow	T	LC	
91.	<i>Hydrophasianus chirurgus</i>	Pheasant-tailed Jacana	A	LC	
92.	<i>Ichthyophaga leucogaster</i>	White-bellied sea eagle	T	LC	
93.	<i>Ixobrychus cinnamomeus</i>	Cinnamon Bittern	A	LC	
94.	<i>Ixobrychus sinensis</i>	Yellow Bittern	A	LC	
95.	<i>Limosa limosa</i>	Black-tailed Godwit	A	LC	
96.	<i>Lonchura malacca</i>	Black-headed Munia	D	LC	
97.	<i>Merops orientalis</i>	Green Bee-eater	T	LC	*
98.	<i>Merops philippinus</i>	Blue-tailed Bee-eater	T	LC	
99.	<i>Mesophoyx intermedia</i>	Intermediate Egret	A	LC	
100.	<i>Milvus migrans</i>	Black Kite	T	LC	*
101.	<i>Motacilla flava</i>	Yellow Wagtail	D	LC	
102.	<i>Motacilla maderaspatensis</i>	White-browed Wagtail	T	LC	
103.	<i>Mycteria leucocephala</i>	Painted Stork	A	NT	*
104.	<i>Nectarinia lotenia</i>	Loten's Sunbird	T	LC	
105.	<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	A	LC	*
106.	<i>Numenius minutus</i>	Little curlew	A	LC	
107.	<i>Numenius phaeopus</i>	Whimbrel	A	LC	
108.	<i>Oriolus oriolus</i>	Eurasean Golden Oriole	T	LC	
109.	<i>Orthotomus sutorius</i>	Common Tailorbird	T	LC	*
110.	<i>Passer domesticus</i>	House Sparrow	T	LC	*
111.	<i>Pelecanus philippensis</i>	Spot-billed Pelican	A	LC	*
112.	<i>Phalacrocorax carbo</i>	Great Cormorant	A	LC	
113.	<i>Phalacrocorax fuscicollis</i>	Indian Shag	A	LC	*
114.	<i>Phalacrocorax niger</i>	Little Cormorant	A	LC	*

115.	<i>Phalaropus lobatus</i>	Red-necked Phalarope	A	LC	
116.	<i>Phoenicopterus ruber</i>	Greater Flamingo	A	LC	
117.	<i>Platalea leucorodia</i>	Eurasian Spoonbill	A	LC	
118.	<i>Plegadis falcinellus</i>	Glossy Ibis	A	LC	*
119.	<i>Ploceus manyar</i>	Streaked Weaver	T	LC	
120.	<i>Pluvialis squatarola</i>	Grey Plover	A	LC	
121.	<i>Porphyrio porphyrio</i>	Purple Swamphen	A	LC	*
122.	<i>Prinia inornata</i>	Plain Prinia	T	LC	*
123.	<i>Prinia socialis</i>	Ashy Prinia	T	LC	*
124.	<i>Psittacula krameri</i>	Rose-ringed Parakeet	T	LC	*
125.	<i>Psilopogon haemacephalus</i>	Coppersmith barbet	T	LC	*
126.	<i>Pycnonotus cafer</i>	Red-vented Bulbul	T	LC	*
127.	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	T	LC	
128.	<i>Rostratula benghalensis</i>	Greater Painted-snipe	A	LC	
129.	<i>Saxicola caprata</i>	Pied Bush Chat	T	LC	*
130.	<i>Saxicoloides fulicata</i>	Indian Robin	T	LC	*
131.	<i>Spilornis cheela</i>	Crested Serpent-Eagle	T	LC	
132.	<i>Sterna albifrons</i>	Little Tern	A	LC	*
133.	<i>Sterna anaethetus</i>	Bridled Tern	A	LC	
134.	<i>Sterna aurantia</i>	River Tern	A	LC	*
135.	<i>Sterna caspia</i>	Caspian Tern	A	LC	
136.	<i>Streptopelia chinensis</i>	Spotted Dove	T	LC	*
137.	<i>Sturnus pagodarum</i>	Brahminy Starling	T	LC	*
138.	<i>Tachybaptus ruficollis</i>	Little Grebe	A	LC	*
139.	<i>Tachymarptis melba</i>	Alpine Swift	T	LC	
140.	<i>Tephrodornis pondicerianus</i>	Common Woodshrike	T	LC	
141.	<i>Terpsiphone paradisi</i>	Asian Paradise-Flycatcher	T	LC	
142.	<i>Thalasseus sandvicensis</i>	Sandwich Tern	A	LC	
143.	<i>Threskiornis melanocephalus</i>	Oriental White Ibis	A	LC	
144.	<i>Threskiornis melanocephalus</i>	Black-headed Ibis	A	NT	*
145.	<i>Tringa ochropus</i>	Green Sandpiper	A	LC	*

146.	<i>Tringa stagnatilis</i>	Marsh Sandpiper	A	LC	*
147.	<i>Turdoides affinis</i>	Yellow-billed Babbler	T	LC	
148.	<i>Turnix suscitator</i>	Common Buttonquail	T	LC	
149.	<i>Tyto alba</i>	Barn Owl	T	LC	*
150.	<i>Upupa epops</i>	Hoopoe	T	LC	
151.	<i>Vanellus indicus</i>	Red-wattled Lapwing	D	LC	*
152.	<i>Vanellus malabaricus</i>	Yellow-wattled Lapwing	D	LC	*
153.	<i>Zoothera citrina</i>	Orange-headed Thrush	T	LC	

LC – Least Concern; * - Yes; T – Terrestrial; A – Aquatic; D – Dry/ desert; NT – Near Threatened

Table 3.41.4. IUCN Status of major plant invasive alien species in Gulf of Mannar Wetland

S. No.	Species	Family	Tamil Name
1.	<i>Ipomoea carnea</i>	Convolvulaceae	
2.	<i>Lantana camara</i>	Verbenaceae	Unnichedi
3.	<i>Martynia annua</i>	Martyniaceae	Thael Kodukku
4.	<i>Parthenium hysterophorus</i>	Compositae	Vishachedi
5.	<i>Prosopis julifera</i>	Fabaceae	Semai karuvel
6.	<i>Senna occidentalis</i>	Caesalpiniaceae	Thagarai
7.	<i>Typha angustifolia</i>	Typhaceae	Sambu
8.	<i>Xanthium indicum</i>	Compositae	Marul oomatham

Table 3.41.5. IUCN Status of major animal invasive alien species in Gulf of Mannar Wetland

S. No.	Species	Family	Common name	IUCN
A. Mammal				
1.	<i>Rattus rattus</i>	Muridae	House Rat	LC
B. Reptile				
2.	<i>Hemidactylus Frenatus</i>	Gekkonidae	House gecko	LC
C. Fish				
3.	<i>Clarias gariepinus</i>	Clariidae	African Catfish	LC

Table 3.41.6. IUCN Status of major medicinal plant species in Gulf of Mannar Wetland

S. No.	Species	Family	Tamil Name	Habit
1.	<i>Abutilon indicum</i>	Malvaceae	Thuthi	Shrub
2.	<i>Acalypha indica</i>	Euphorbiaceae	Kuppaimeni	Herb
3.	<i>Acanthospermum hispidum</i>	Compositae		Herb
4.	<i>Achyranthes aspera</i>	Amaranthaceae	Nayurivi	Herb
5.	<i>Aerva lanata</i>	Amaranthaceae	Peelai, Sirupeelai	Herb
6.	<i>Boerhavia diffusa</i>	Nyctaginaceae	Mookarattai	Herb
7.	<i>Calotropis gigantea</i>	Asclepiadaceae	Erukku, Arkkam	Shrub
8.	<i>Cardiospermum halicacabum</i>	Sapindaceae	Mudakotthan	Herb
9.	<i>Cynodon dactylon</i>	Poaceae	Aruhampul	Grass
10.	<i>Pedaliium murex</i>	Pedaliaceae		Herb
11.	<i>Solanum trilobatum</i>	Solanaceae	Thoodhuvalai	Herb
12.	<i>Tephrosia purpurea</i>	Fabaceae	Kozhinji	Herb
13.	<i>Tinospora cordifolia</i>	Menispermaceae	Seendhil	Climber
14.	<i>Tylophora indica</i>	Asclepiadaceae	Naippalai	Climber

CHECK LIST

- ✓ Responsible agency has been clearly identified and details of contact person included
- ✓ Wetland/Wetlands complex boundary has been delineated using GIS and firmed up by adequate ground truthing
- ✓ Wetland/Wetlands complex map has been provided at required scale
- ✓ Zone of influence has been delineated and included in Wetland map or a separate map
- ✓ Wetland zone of influence is sufficient to manage all activities
- ✓ Site's importance have been listed, and for major categories, justification provided
- ✓ Site's biodiversity values are listed, and for major categories, justification provided
- ✓ List of pre-existing rights and privileges provided
- ✓ Consistency or, inconsistency of pre-existing rights and privileges indicated to be best of available knowledge
- ✓ Threats to site listed, and for major categories details provided
- ✓ Activities prohibited, beyond those already listed in Rule 4 (2) have been mentioned
- ✓ List of activities to be regulated within Wetlands and zone of influence is provided
- ✓ List of activities to be permitted is provided