

## **BRIEF DOCUMENT OF BEYPORE**

State / Union Territory : Kerala

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

1. Member Secretary, State Wetland Authority, Kerala (Director, Directorate of Environment and Climate Change, Govt. of Kerala), 4th Floor, KSRTC Bus Terminal, Thampanoor, Thiruvananthapuram - 1.
- 2.

### **Section 1: Identification, Location and Jurisdiction**

**1.1** Name of the Wetland (Alternative names, including in local language should be given in parenthesis after official name) : **Beypore**

**1.2** Name of the Village(s) , Tehsil(s), Municipal area (s) :

Villages : Beypore, Cheruvamur, Karuvanthuruthi

Taluks : Kozhikode

Municipality : Feroke

Corporation : Kozhikode

**1.3** District(s) in which wetland complex is located : Kozhikode

**1.4** Geographical coordinates (Latitude and Longitude, from - to degrees, minutes and seconds):

: Latitude: From 11°9'20.283" to 11°11'0.659"N

: Longitude: From 75°48'9.744" to 75°49'49.993"E

**1.5** Name of the Department / Agency which has jurisdiction over the wetland / wetlands complex

: Local Self Governments, Kerala Coastal Zone Management Authority and State Wetland Authority Kerala

### **Section 2: Site Characteristics**

**2.1** Area of wetland / wetlands category (ha) : 281.06

**2.2** Wetland type (Please tick appropriate categories and sub-categories)

Category	Subcategory
<input type="checkbox"/> Natural (Inland)	<input type="checkbox"/> Permanent lakes <input type="checkbox"/> Seasonal/ intermittent lakes <input type="checkbox"/> Permanent streams/ creeks <input type="checkbox"/> Seasonal/ intermittent streams/ creeks <input type="checkbox"/> Oxbow <input type="checkbox"/> River floodplain <input type="checkbox"/> Permanent freshwater marshes <input type="checkbox"/> Seasonal/ intermittent freshwater marshes <input type="checkbox"/> Shrub-dominated wetlands <input type="checkbox"/> Tree-dominated wetlands <input type="checkbox"/> Geothermal wetlands <input type="checkbox"/> Karst and other subterranean hydrological systems
<input checked="" type="checkbox"/> Natural (Coastal)	<input type="checkbox"/> Coastal lagoon <input checked="" type="checkbox"/> Estuary <input type="checkbox"/> Intertidal mud, sand or salt flats <input type="checkbox"/> Mangroves <input type="checkbox"/> Coral reefs
<input type="checkbox"/> Human-made	<input type="checkbox"/> Aquaculture pond <input type="checkbox"/> Tank <input type="checkbox"/> Saltpan <input type="checkbox"/> Dam / Reservoir

2.3 Depth (m) : Data Not Available

2.4 Elevation (m above mean sea level) : 0 to 2420m (Including the Zone of Influence)

2.5 Water regimes

a) Main source of water (tick all applicable)

Rainfall     Groundwater     Catchment runoff     Direct / indirect inflow from river

Others, please specify \_\_\_\_\_

b) Water permanence

Mostly permanent    Mostly intermittent

c) Destination of water from wetland

Feeds groundwater    To downstream catchment    To river    To sea

d) Water pH

Acid (< 5.5)    Circum neutral (5.5 – 7.4)    Alkaline (> 7.4)    Not known

e) Water salinity

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

f) Nutrient in water

Eutrophic    Mesotrophic    Oligotrophic    Not known

2.6 Climatic setting

a) Annual Rainfall (mm) :3830  
b) Temperature (°C) :Minimum 23.7°C, Maximum 30.9° C  
c) Humidity (%) :Minimum 60%, Maximum 90%

2.7 Area of zone of influence (in ha) : 249540.39

2.8 Major land use within zone of influence (provide as approximate % of catchment area)

Forests : 42.47  
Plantation : 01.09  
Agriculture : 30.23  
Settlements (Rural) and (Urban) : 24.52  
Water body : 01.09  
Industrial : 0.01

## 2.9 Map of wetland complex and zone of influence:

### Section 3: Biodiversity

#### 3.1 Notable plant species present in wetland

**Mangroves :** *Acanthus ilicifolius*, *Avicennia officinalis*

#### 3.2 Notable animal species present in wetland:

**Benthic foraminifera:** *Ammonia tepida*, *Nonion grateloupi*, *Ammonia parkinsoniana*, *Nonion scaphum*

**Carnivorous mammal:** *Urva edwardsii*

**Birds:** *Numenius arquata*, *Actitis hypoleucos*, *Tringa nebularia*, *Larus fuscus*, *Chlidonias hybrida*, *Sterna aurantia*, *Anhinga melanogaster*, *Microcarbo niger*, *Ardea alba*, *Ardea intermedia*, *Egretta garzetta*, *Egretta gularis*, *Ardeola grayii*, *Butorides striata*, *Milvus migrans*, *Haliastur indus*, *Corvus splendens*, *Corvus macrorhynchos*, *Passer domesticus*

**Odonata:** *Caconeura gomphoides*, *Chlorogomphus campioni*, *Epithemis mariae*, *Euphaea dispar*, *Idionyx galeata*, *Idionyx nadganiensis*, *Idionyx rhinoceroides*, *Idionyx saffronata*, *Idionyx travancorensis*, *Macrogomphus wynaadicus*, *Macromia ida*, *Macromia irata*, *Macromidia donaldi*, *Melanoneura bilineata*, *Merogomphus longistigma*, *Microgomphus souteri*, *Onychogomphus nilgiriensis*, *Phylloneura westermanni*, *Platysticta deccanensis*, *Protosticta antelopoides*, *Protosticta hearseyi*, *Protosticta sanguinostigma*

**Fishes:** *Horabagrus brachysoma*, *Caranx ignobilis*, *Carangoides malabaricus*, *Alepes djedaba*, *Alepes melanoptera*, *Lutjanus argentimaculatus*, *Lutjanus fulviflamma*, *Lutjanus johnii*, *Ambassis gymnocephalus*, *Ambassis macracanthus*, *Gerres filamentosus*, *Gerres erythrorus*, *Daysciaena albida*, *Johnius belangerii*, *Glossogobius giuris*, *Eleutheronematetractylum*, *Sillagosihama*, *Scatophagusargus*, *Sphyraena barracuda*, *Teraponjarbua*, *Etroplussuratensis*, *Epinephelusmalabaricus*, *Leiognathusequulus*, *Acanthocybiumsolandri*, *Arius arius*, *Arius jella*, *Mystus gulio*, *Thryssa mystax*, *Stolephorus commersonii*, *Anodonto stomachacunda*, *Platycephalus indicus*, *Mugil cephalus*, *Hyporhamphus limbatus*, *Cynoglossus macrolepidotus*, *Ariosoma mellissii*

#### 3.3 Species of conservation significance (rare, endangered, threatened, endemic species):

*Numenius arquata* (NT), *Idionyx galeata* (EN), *Platysticta deccanensis*, *Protosticta sanguinostigma*, *Horabagrus brachysoma* (VU), *Caconeura gomphoides*, *Chlorogomphus campioni*, *Epithemis mariae*, *Euphaea dispar*, *Idionyx rhinoceroides*, *Idionyx saffronata*, *Idionyx*

*travancorensis*, *Macrogomphus wynaadicus*, *Macromia ida*, *Macromia irata*, *Melanoneura bilineata* (**Endemic**)

**3.4** Major plant invasive alien species:

*Mikania micrantha*, *Mimosa pudica*, *Ipomoea cairica*, *Lantana camara*, *Dactyloctenium aegyptium*, *Acacia catechu*, *Ageratum conyzoides*, *Alternanthera bettzickiana*, *Alternanthera paronychioides*, *Alternanthera tenella*, *Amaranthus spinosus*, *Chloris barbata*, *Chromolaena odorata*, *Mimosa diplotricha*

**3.5** Major animal invasive alien species:

Data Not Available

**Section 4: Ecosystem services**

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (up to 50 words for each category)
Source of drinking water for people living and around	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Source of water for agriculture	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Fisheries	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Small and big boats were used in fishing. Local people catch fish using fishing rods and also collect mussels (Kadukka) from the rocks under the water. Beypore fish harbour and Chaliyam fish market are situated here
Cultivation of aquatic food plants	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
For buffalo wallowing and use of domesticated animals	<input type="checkbox"/> Yes <input type="checkbox"/> No	No records found
Medicinal plants	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports medicinal plants like <i>Avicennia officinalis</i> , <i>Acanthus ilicifolius</i> and <i>Mimosa pudica</i>
Is a recreational site/tourism	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The site is used for recreational activities like fishing, boating etc. Tourist spot like Beypore Pulimuttu, Beypore Chaliyum Jankar point etc can be seen here.

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (up to 50 words for each category)
Buffering communities from extreme events as floods and storms	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Groundwater recharge	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Water purification	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Acts as a sink for sediments	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	During Non-Monsoon the continental shelf sediments are carried into the estuary and are found to deposit in the estuary due to weak ebb currents but in the monsoon the ebb currents are strong due to the continuous discharge from the Chaliyar River; because of this the continental sediments are washed off along with the upstream sediment
Has significant cultural and religious values	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	In ancient times Beypore port was the gateway of international trade. It is historically famous for building 'Urus' or huge wooden boats that the Arabs used to trade and fish within the past. Now these architectural marvels are used as a tourist attraction.
Supports noteworthy plants species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports noteworthy plants as reported in the Section 3.1
Supports noteworthy animal species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports noteworthy animals as reported in the Section 3.2
Site of high congregation of migratory water birds	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not quantitatively assessed
Supports life cycle of fish or amphibians	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not quantitatively assessed
Mining	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Any other, please list		

## Section 5: Pre-Existing Rights and Privileges

Nature of right and privilege	Relevant for the site (please tick yes or no)	Does this negatively impact the wetland's ecological health?	Brief description (up to 50 words for each category)
Community Fishing (without any lease or permission from government department)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	The local people engaged in the harvest or processing of fishery resources to meet social and economic needs
Fishing under lease from government department	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Harvest of plants (without any lease or permission from government department)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Harvest of plants under lease from government department	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Agriculture or horticulture within wetland	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Grazing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Religious practices	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Withdrawal of water for domestic use	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Withdrawal of water for agriculture or fisheries	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Bathing or wallowing of domestic animals	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	Not assessed quantitatively
Plying of boats	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	Country boats used for fishing & local transport
Any other, please list here	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	-

Nature of right and privilege	Relevant for the site (please tick yes or no)	Does this negatively impact the wetland's ecological health?	Brief description (up to 50 words for each category)
		<input type="checkbox"/> Not assessed	

### Section 6: Present and Potential Threats

Threat	Degree	Present or Potential	Additional information, if any
Pollution	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Untreated effluents from port, fishing harbour activities, and input of municipal sewage pollute the estuarine ecosystem. A study conducted by Sreenivasulu et al, 2019 reported that the dominance of stress tolerant benthic foraminifera and absence of <i>Elphidium</i> species in the estuary indicate the prevalence of hypoxic (low-oxygen) conditions. The consistent low-diversity index of foraminifera indicates that the estuarine ecosystem is ecologically moderate to highly stressed
Siltation	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input type="checkbox"/> Present <input checked="" type="checkbox"/> Potential	Not assessed quantitatively
Spread of invasive species	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Recorded invasive plant species as mentioned in section 3.4

### Section 7: Activities Proposed to be prohibited (other than those listed in Rule 4(2) of Wetlands Rules)



Activity	Prohibited within wetlands or zone of influence	Details of specific area wherein activity is prohibited	Name of department / agency responsible for regulation	Additional information, if any	Activity
	<input type="checkbox"/>	<input type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence			

### Section 8: Activities Proposed to be regulated

Activity	Place a tick mark if relevant	Regulation within wetlands or zone of influence	Level of regulation (in terms of people, restricted area or any other)	Name of department / agency responsible for regulation	Additional information, if any
Withdrawal of water / impoundment/diversion or any other hydrological intervention	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Within the wetland	Wetland Management Unit, SWAK, Irrigation Department.	Need to take prior permission from Wetland Management Unit/ SWAK
Discharge of treated sewage/ effluent / wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Within the wetland	Wetland Management Unit/ SWAK, SPCB	Need to take prior permission from Wetland Management Unit/ SWAK
Aquaculture, agriculture and horticulture activities within the wetland boundaries.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary	Within the wetland	Wetland Management Unit, SWAK, Dept of	Need to take prior permission from Wetland

Activity	Place a tick mark if relevant	Regulation within wetlands or zone of influence	Level of regulation (in terms of people, restricted area or any other)	Name of department / agency responsible for regulation	Additional information, if any
		<input type="checkbox"/> Zone of influence		Fisheries, Dept of Agriculture	Management Unit/SWAK
Any other, please list	<input type="checkbox"/>	<input type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence			

#### Section 9: Activities Proposed to be permitted

Activity	Place a tick mark if relevant	Within wetlands or zone of influence	Additional information, if any
	<input type="checkbox"/>	<input type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	

#### Section 10: Listing of Available Scientific Resources Used

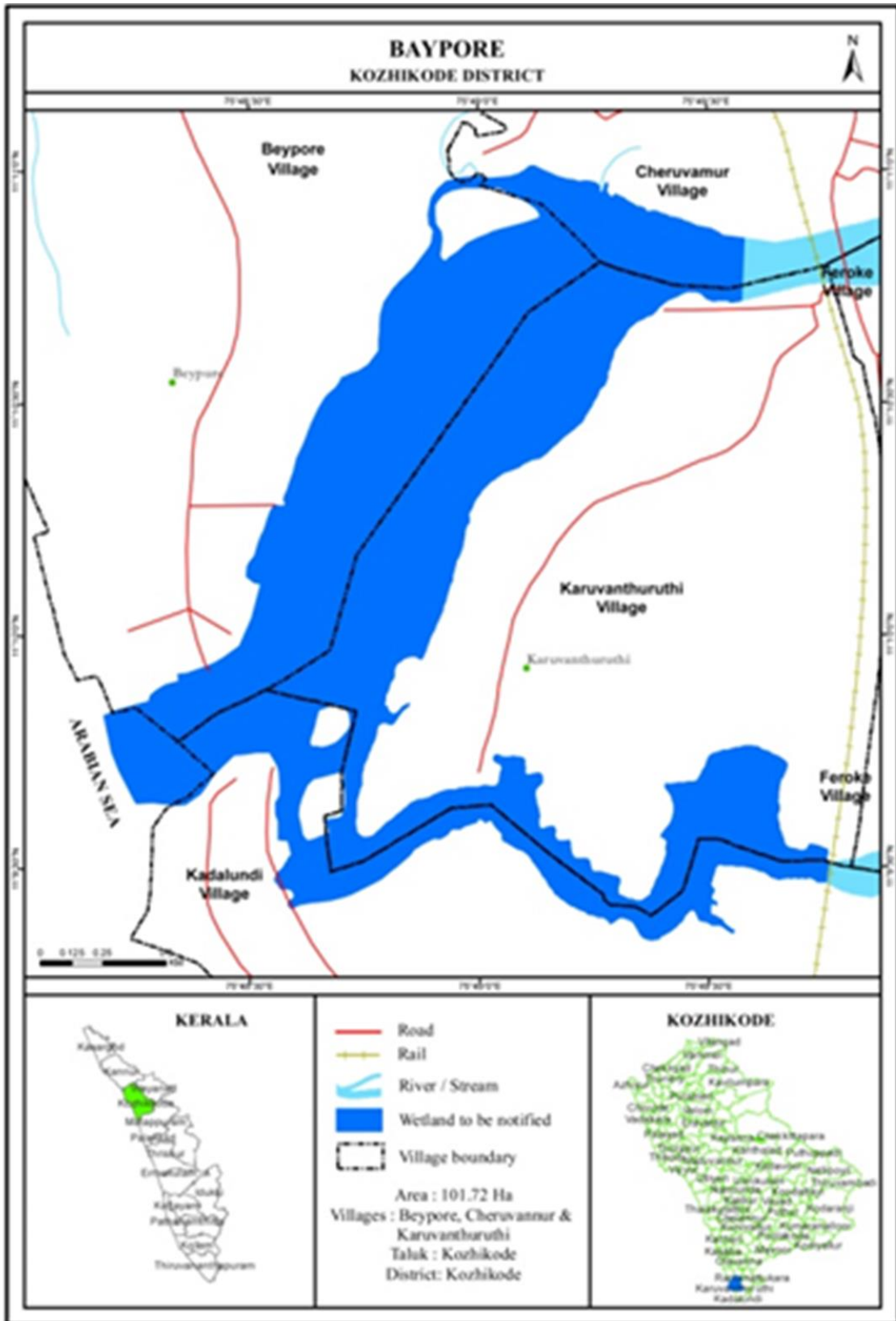
1. Anitha, A. B., Shahul Hamed, A., & Prasad, N. B., 2014. Integrated river basin master plan for Chaliyar. Proc. In International symposium on integrated water resources management (IWRM–2014) CWRDM, Kozhikode, Kerala (pp. 167-176).
2. Ansa Thasneem, S., Thampi, S. G., & Chithra, N. R., 2021. Assessment of Variation of Stream flow Due to Projected Climate Change in a Water Security Context: A Study of the Chaliyar River Basin, India. In Water Security in Asia (pp. 223-237). Springer, Cham.

3. Nan, N, 2021. GIS Based water quality analysis of Chaliyar River in Kerala state. Possible Schematic Representation of the Operational Processes of a Laboratory.
4. Ranganath et al., (2019). Impact of Breakwater on Estuary Mouth Stabilization from Sedimentation perspective. International Journal of Modern Engineering Research (Vol. 9, Issue 2).
5. Sreenivasulu, G., Praseetha, B. S., Daud, N. R., Varghese, T. I., Prakash, T. N., & Jayaraju, N, 2019. Benthic foraminifera as potential ecological proxies for environmental monitoring in coastal regions: A study on the Beypore estuary, Southwest coast of India. Marine Pollution Bulletin, 138, 341-351.
6. Sreelekshmi, S., Preethy, C. M., Varghese, R., Joseph, P., Asha, C. V., Nandan, S. B., & Radhakrishnan, C. K. (2018). Diversity, stand structure, and zonation pattern of mangroves in southwest coast of India. *Journal of Asia-Pacific Biodiversity*, 11(4), 573-582.

#### **CHECKLIST**

- 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 is provided
- Site's biodiversity values are listed, and for major categories, justification is provided
- List of pre-existing rights and privileges is provided
- Consistency or inconsistency of pre-existing rights and privileges is indicated to be best of available knowledge
- Threats to site are listed, and for major categories details are 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

**Annexure I :**



## Annexure II :

