

## **BRIEF DOCUMENT OF KADALUNDI**

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, Government of Kerala), 4<sup>th</sup> Floor, KSRTC Terminal Complex, Thampanoor, Thiruvananthapuram- 1.

### **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): **Kadalundi Kayal**

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

Villages : Vallikkunnu  
Panchayats : Kadalundi, Vallikkunnu

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

**1.4** Geographical coordinates (Latitude and Longitude, to degree, minutes and second)

Latitude : 11°7'28" to 11°8'01"N  
Longitude : 75°49'36" to 75°50'20"E

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

Local Self Governments, Irrigation Department, State Wetland Authority Kerala and the Kerala Coastal Zone Management Authority (in CRZ Area)

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

**2.1** Area of wetland / wetlands category (ha) :**103.77**

**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 checked="" type="checkbox"/> Intertidal mud, sand or salt flats <input checked="" 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 1320 (Including 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)             Circumneutral (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) : 3610
- b) Temperature (°C) : Minimum 28.2, Maximum 29.7
- c) Humidity (%) : Specific data not available

**2.7 Area of zone of influence (in ha) : 118798.46**

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

Forests : 11.29

Plantation : 01.09

Agriculture : 39.11

Settlements (Rural) and (Urban)	: 47.71
Water body	: 0.80
Industrial	: 0.01

## 2.9 Map of wetland complex and zone of influence ( To be collected from KSREC)

### Section 3: Biodiversity

#### 3.1 Notable plant species present in wetland:

Mangroves are the key attraction of the wetland. The species include *Bruguiera cylindrica*, *Sonneratia alba*, *Rhizophora mucronata*, *Excoecaria agallocha*, *Acrostichum aureum*, *Acanthus ilicifolius*, *Avicennia officinalis*.

Ten species of mangrove associate flora are also documented. They include *Derris trifoliata*, *Acrostichum aureum*, *Premna serratifolia*, *Terminalia catappa*, *Thespesia populnea*, *Cerbera odollam*, *Morinda citrifolia*, *Ipomoea violacea*, *Ipomoea pes-caprae*

A total of 111 species of phytoplankton were recorded from the Kadalundi estuary during 2018-2019. These phytoplankton belonged to five major groups viz., Bacillariophyta, Miozoa, Cyanobacteria, Chlorophyta and Charophyta. Majority of the species (66 species) belonged to the group Bacillariophyta, while Miozoa, Cyanobacteria, Chlorophyta and Charophyta were 26, 5, 6 and 8 species respectively. Seagrass species identified is *Halophila beccarii*

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

Migratory bird species includes *Thalasseus sandvicensis*, *Chroicocephalus ridibundus*, *Tringa totanus*, *Tringa nebularia*, *Pluvialis fulva*, *Numenius phaeopus*, *Anhinga anhinga*, *Calidris alba*, *Pluvialis squatarola*, *Limosa limosa*, *Limosa lapponica*, *Calidris tenuirostris*, *Thalasseus bengalensis*, *Calidris alpina*, *Charadrius dubius*, *Himantopus himantopus*, *Ardea alba*, *Ardea cinerea*, *Sula dactylatra*.

14 species of molluscs were found here, which belonged to 13 genera under 9 families and 7 orders. They are *Saccostrea cucullata*, *Magallana bilineata*, *Polymesoda bengalensis*, *Telescopium telescopium*, *Meretrix casta*, *Tegillarca granosa*, *Cerithidea cingulata*, *Clypeomorus batillariaeformis*, *Neritina violacea*, *Cassidula nucleus*, *Perna viridis*, *Perna indica*, *Mytella strigata*, *Modiolus sp.*

Arthropods include *Scylla serrata*, *Penaeus indicus*, *Penaeus monodon*

*Acromitus flagellatus* (Jellyfish) are also seen in the region. They are generally inhabitants of coastal waters, but at times they are found to enter the Kadalundi wetland and have been recorded even up to 3 km upstream, indicating their tolerance to low salinities. Their occurrence is more during November to February.

59 species of fin fishes are reported here. They are *Megalops cyprinoides*, *Anguilla bengalensis bengalensis*, *Anguilla bicolor*, *Sardinella dayi*, *Sardinella longiceps*, *Rastrelliger kanagurta*, *Anodontostoma chacunda*, *Nematalosa nasus*, *Stolephorus commersoni*, *Thryssa malabarica*, *Thryssa mystax*, *Thryssa dussumieri*, *Chanos chanos*, *Arius maculatus*, *Mystus gulio*, *Strongylura strongylura*, *Aplocheilus lineatus*, *Platycephalus indicus*, *Thysanophrys sp.*, *Lates calcarifer*, *Ambassis commersoni*, *Ambassis gymnocephalus*, *Ambassis gymnocephalus*, *Terapon theraps*, *Sillago sihama*, *Lactarius lactarius*, *Caranx sexfasciatus*, *Caranx ignobilis*, *Caranx heberi*, *Carangoides malabaricus*, *Carangoides coeruleopinnatus*, *Leiognathus blochii*, *Leiognathus splendens*, *Leiognathus brevisrostris*, *Lutjanus argentimaculatus*, *Lutjanus fulviflamma*, *Lutjanus russellii*, *Gerres filamentosus*, *Gerres limbatus*, *Monodactylus argenteus*, *Scatophagus argus*, *Etroplus maculatus*, *Etroplus suratensis*, *Liza macrolepis*, *Liza parsia*, *Liza tade*, *Liza melanoptera*, *Mugil cephalus*, *Eleutheronema tetradactylum*, *Glossogobius giuris*, *Siganus canaliculatus*, *Siganus javus*, *Siganus vermiculatus*, *Acanthopagrus berda*, *Ostorhinchus fasciatus*, *Trypauchen vagina*, *Thunnus sp.*, *Cynoglossus macrostomus*, *Psettodes erumei*, *Pseudorhombus elevatus*, *Chelonodon patoca*

There four species of shrimps viz., *Fenneropenaeus indicus*, *Penaeus monodon*, *Metapenaeus monoceros* and *Metapenaeus dobsoni* are recorded from the wetland

A total of nine species of true mangrove crabs includes *Scylla serrata*, *Scylla tranquebarica*, *Thranita crenata*, *Grapsus albolineatus*, *Metopograpsus latifrons*, *Metopograpsus thukuhar*, *Dotilla myctiroides*, *Parasesarma plicatum*, *Austruca perplexa*

22 individuals of smooth-coated otter, *Lutrogale perspicillata* are reported from the Kadalundi-Vallikunnu Community Reserve.

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

Seagrass species *Halophila beccarii* is listed as vulnerable (VU)

The Great knot (*Calidris tenuirostris*) is listed as an endangered species (EN), Oriental darter (*Anhinga melanogaster*), Black-headed Ibis (*Threskiornis melanocephalus*), Eurasian curlew (*Numenius arquata*), Bar-tailed godwit (*Limosa lapponica*), Black-tailed godwit (*Limosa*

*limosa*), Eurasian oystercatcher (*Haematopus ostralegus*) and the Woolly-necked stork (*Ciconia episcopus*) are listed as Near Threatened (NT).

Brahminy Kite (*Haliastur indus*), Black kite (*Milvus migrans*) and Shikra (*Accipiter badius*) are listed in the Schedule I of Indian Wildlife (Protection) Act, 1972.

The smooth-coated otter, (*Lutrogale perspicillata*) is listed as Vulnerable (VU)

### 3.4 Major plant invasive alien species

No data available

### 3.5 Major animal invasive alien species

No data 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Agriculture is the main source of income for the local residents in addition to fisheries
Fisheries	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fishing by gill net, cast net, hook and line, traps, oyster picking, Aquaculture (fish seed production, mussel farming). Two groups of fishermen operate the specially designed bamboo fence, locally called 'thada'. Oyster picking is also one of the high-income generation avenues for the fishermen
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 checked="" type="checkbox"/> No	-
Medicinal plants	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

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	Not assessed quantitatively
Has significant cultural and religious values	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Kadalundi-Chaliyam-Beyepore region had trade relations with foreign countries like Rome and Arabia.
Is a site for recreation and tourism	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	People often visit the site for recreation purposes. Eco-tourism is gaining momentum in the Kadalundi-Vallikunnu Community Reserve with an increase in the number of tourists
Supports noteworthy plants species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports plant species as mentioned in section 3.1
Supports noteworthy animal species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports animal species as mentioned in section 3.2
Site of high congregation of migratory water birds	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As mentioned in section 3.2, migratory birds are reported in the wetland region.
Supports life cycle of fish or amphibians	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports life cycle of species mentioned in 3.2
Mining	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Kadalundi Grama Panchayat permits mining of sand in a limited way
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 type="checkbox"/> No <input checked="" type="checkbox"/> Not assessed	In the mangrove laden area, the fisheries and allied activities are of prime importance. Major

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)
			<p>section of the local folks routinely engage in fishing activity either as their main occupation or subsidiary activity for one or two hours of the day. Fishing as main occupation provides full day employment (about 8 hours per day) primarily for males. The females after their household activities devote 3-5 hours per day for allied fishing like mussel extraction and dry fish production. A study may be required to assess the fish diversity and the impacts of community fishing here.</p>
Fishing under lease from government department	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not assessed	<p>Large scale cultivation of green mussels is undertaken in the region. The local self government and Central Marine Fisheries Research Institute (CMFRI) Kochi have initiated a few schemes for promoting mussel cultivation. The local people have been engaged in mussel farming as a primary or secondary occupation.</p>



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)
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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	Small scale agriculture is a source of income for the local residents. This include paddy cultivation, coconut and vegetables
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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Plying of boats	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not assessed	Boats are used here for fishing and local commuting.
Any other, please list here	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	

## Section 6: Present and Potential Threats

Threat	Degree	Present or Potential	Additional information, if any
Changes in water inflow and outflow	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Changes in the inflow and outflow were reported; but not assessed quantitatively
Pollution	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	<p>Water pollution due to waste dumping, land reclamation, and unscientific mining are reported in the wetland. The major source of pollution near the estuary includes sewage and faecal disposal, pesticides and chemical fertilizers from paddy fields, retting of coconut husk, slaughterhouse waste and domestic wastes.</p> <p>Plastic waste dumped into the river are settled in the mangroves which cause serious problems to the functioning of the mangrove ecosystem.</p>
Mining	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Although the Kadalundi Grama Panchayat permits mining of sand in a limited way from

Threat	Degree	Present or Potential	Additional information, if any
			quite a distance from the Kadalundi bridge, large-scale illegal mining is taking place in the estuary.
Encroachment	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	<p>Kadalundi is currently subjected to acute pressure of rapid development activities. The industrial activities, urbanization, infrastructure development, unauthorised encroachment of the public areas near estuary are happening. Initially most of the encroachments were for agriculture purposes, later these areas were reclaimed and used for various other purposes. Encroaching mangrove areas and clearing it for tourism, recreation and other purposes causes siltation leading to vertical shrinkage and related problems like salinity</p>

Threat	Degree	Present or Potential	Additional information, if any
			intrusion, ecological disturbances and biodiversity loss.
Any other, please list	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Present <input type="checkbox"/> Potential	

**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
	<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	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary	Within the wetland	Wetland Management Unit, SWAK, Irrigation Department, KCZMA	Need to take prior permission for large scale hydrological interventions,

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
hydrological intervention		<input type="checkbox"/> Zone of influence			from the 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, PCB	Need to take prior permission for large scale discharge of treated sewage/effluent from the 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 <input type="checkbox"/> Zone of influence	Within the wetland	Wetland Management Unit, SWAK, Fisheries/Agriculture Department/ KCZMA	Need to take prior permission for large scale aquaculture/agriculture activities from the Wetland Management Unit/SWAK
Soil erosion and sand mining/silt removal	<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, Soil Conservation Department	Need to take prior permission for large scale silt removal (> 0.5 ha area spread / > 250m length)

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
					stretch) from the Wetland 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. CWRDM, 2017. Detailed Project Report of Kadalundi Ecosystem. Centre for Water Resources Development and Management, Kozhikode.
2. Bindu, K. B. and Jaypal, G , 2016. Environmental status of Kadalundi river basin in Kerala - a case study of Kadalundi estuary,
3. Vinod, K., Asokan, P.K., Joshi, K.K., Narayana Kumar, R. , Zacharia, P.U., Molly Varghese, Jasmine, S., Anasukoya, A., Kunhi Koya, V.A., Ansar, C.P. Nikhiljith, M.K.Vijesh Vallikunnu, Palot, M.J., Dinesan Cheruvat and Gopalakrishnan, A. 2020. Glimpses of biodiversity in the Kadalundi-Vallikunnu Community Reserve, the first Community Reserve

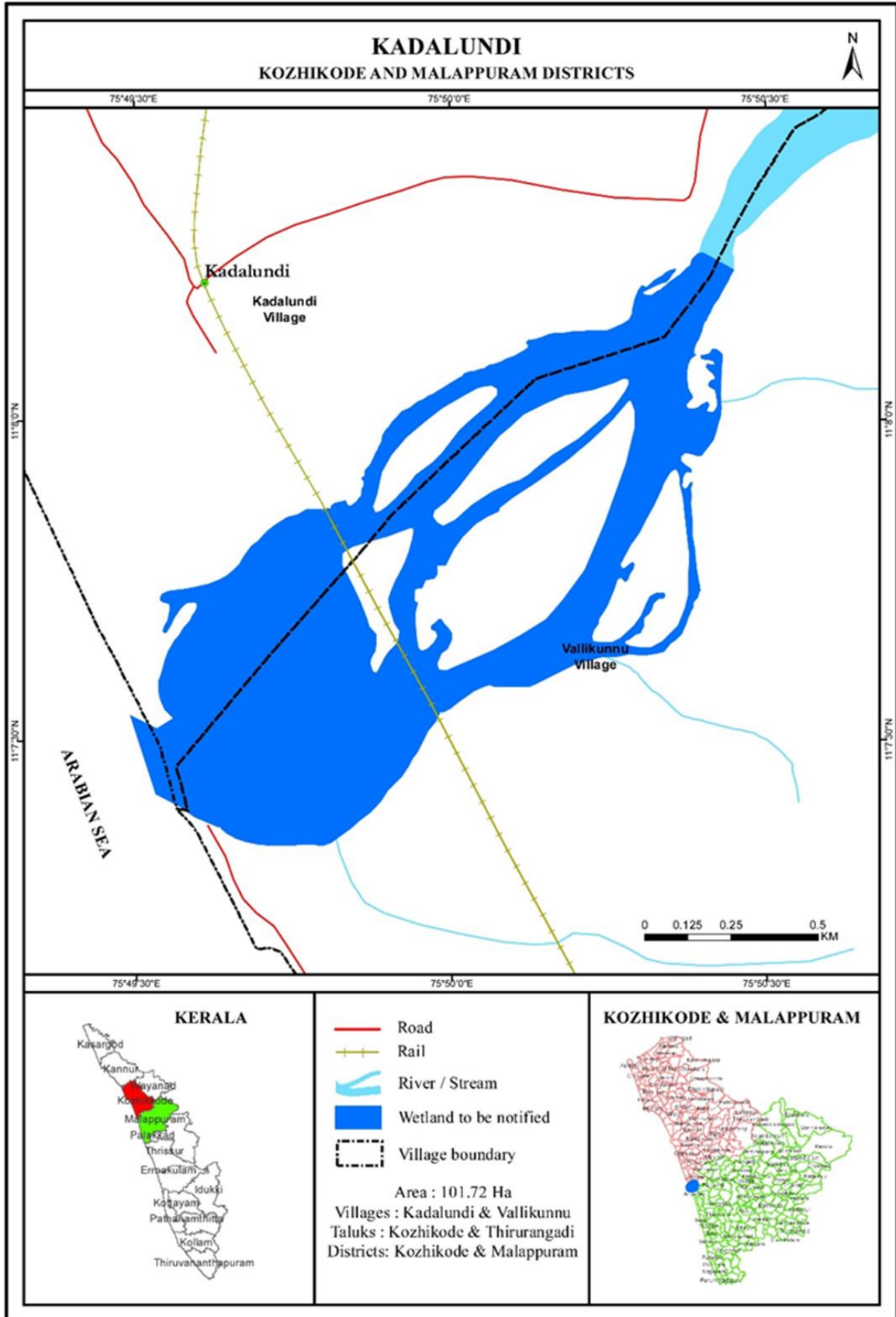
of Kerala. CMFRI Special Publication No. 139, ICAR-Central Marine Fisheries Research Institute, Kochi, India, 116 p.

4. Ramya A, P., Kaladharan, K, Vinod, P. K. and Ashokan, Present status of *Halophila beccarii* sea grass bed in Kadalundi Community Reserve, 2019, ICAR-Central Marine Fisheries Research Institute, Kochi, India.
5. Kunji M.K.V., 2012. Empowerment of community reserve stakeholders for livelihood enhancement and conservation of natural resources at Kadalundi and Vallikunnu Panchayat. Kerala Forest Research Institute, Thrissur.
6. Varghese, M., Vinod, K., Gireesh, R., Anasu Koya, A., Ansar, C.P., Nikhiljith, M., Sheeba, K.B., Asokan, P.K. and Joshi, K.K., 2022. Distribution and diversity of phytoplankton in Kadalundi estuary, southwest coast of India. *Journal of the Marine Biological Association of India*, 64(1), pp.50-56.

## 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 :**

