

BRIEF DOCUMENT OF PONNANI

State / Union Territory : Kerala

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 (Alternative names, including in local language should be given in parenthesis after official name) : Ponnani

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

Villages : Izhuvattirutti, Kalady, Ponnani Nagaram, Mangalam,
Purathur and Thripangode

Taluks : Ponnani, Thirur

Municipality : Ponnani

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

1.4 Geographical coordinates (Latitude and Longitude, to degree, minutes and seconds):

Latitude: From 11°13'36.818"N to 11°14'21.714"N

Longitude: From 75°46'45.063"E to 75°47'49.472"E

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

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

Section 2: Site Characteristics

2.1 Area of wetland / wetlands category (ha): 946.62

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) : No data Available

2.4 Elevation (m above mean sea level) : 0 - 1520 (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 ___tidal saline waters reach here_____

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) : 3200
b) Temperature (°C) : Minimum: 23.5, Maximum: 35.0
c) Humidity (%) : Minimum: 70, Maximum: 98

2.7 Area of zone of influence (in ha) : 404194.28

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

Forests : 16.97
Plantation : 6.45
Agriculture : 45.84
Settlements (Rural) and (Urban) : 28.03
Water body : 2.64
Industrial : 0.08

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*, *Excoecaria agallocha*, *Rhizophora mucronata*, *Bruguiera cylindrica*

Others: *Nymphaea nouchali*, *Ludwigia perennis*, *Ludwigia adscendens*, *Hygrophila schulli*, *Ipomoea carnea*, *Ipomoea pes-caprae*, *Bacopa monnieri*, *Clerodendrum inerme*, *Hydrilla verticillata*, *Monochoria vaginalis*, *Schoenoplectus articulatus*, *Hygroryza aristata*, *Evolvulus alsinoides*, *Centella asiatica*, *Nelumbo nucifera*, *Sphagneticola trilobata*, *Kyllinga nemoralis*, *Heliotropium indicum*, *Mimosa pudica*, *Lucas aspera* and *Cynodon dactylon*

3.2 Notable animal species present in wetland

Fishes: *Carcharhinus limbatus*, *Alepes djedaba*, *Scoliodon laticaudus*, *Carangoides ferdau*, *Sphyrna zygaena*, *Carangoides hedlandensis*, *Megalops cyprinoides*, *Carangoides malabaricus*, *Anguilla bengalensis bengalensis*, *Carangoides praeustus*, *Muraenesox cinereus*, *Carangoides sexfasciatus*, *Lycodontis tile*, *Megalopsis cordyla*, *Hilsa ilisha*, *Scomberoides commersonianus*, *Escualosa thoracata*, *Apolectus niger*, *Herklotsichthys quadrimaculatus*, *Mene maculate*, *Sardinella dayi*, *Gazza minuta*, *Sardinella longiceps*, *Leiognathus bindus*, *Anodontostoma chacunda*, *Leiognathus blochii*, *Nematalosa nasus*, *Leiognathus brevirostris*, *Corica soborna*, *Leiognathus equula*, *Ilisha melastoma*, *Leiognathus splendens*, *Stolephorus commersoni*, *Pampus chinensis*, *Stolephorus indicus*, *Pseudorhombus elevates*, *Thryssa dussumieri*, *Cynoglossus arel*, *Thryssa malabarica*, *Cynoglossus cynoglossus*, *Thryssa mystax*, *Cynoglossus lingua*, *Thryssa vitrirostris*, *Cynoglossus puncticeps*, *Chanos chanos*, *Paraplagusia bilineata*, *Puntius sarana subnasutus*, *Euryglossa orientalis*, *Arius arius*, *Chelonodon patoca*, *Arius caelatus*, *Secutor insidator*, *Arius maculatus*, *Lutjanus argentimaculatus*, *Mystus gulio*, *Lutjanus ehrenbergii*, *Mystus montanus*, *Lutjanus fulviflamma*, *Mystus montanus*, *Gerres filamentosus*, *Bregmaceros maclellandi*, *Pomadasys argenteus*, *Pseudapocryptes lanceolatus*, *Pomadasys maculatus*, *Sicyopterus griseus*, *Daysciaena albida*, *Eleotris fusca*, *Dendrophis russelli*, *Trypauchen vagina*, *Johnius russelli*, *Siganus canaliculatus*, *Otolithes ruber*, *Siganus javus*, *Monodactylus argenteus*, *Trichiurus lepturus*, *Drepane punctata*, *Rastrelliger kanagurta*, *Scatophagus argus*, *Scomberomorus guttatus*, *Etroplus maculatus*, *Pampus argenteus*, *Etroplus suratensis*, *Hyporhamphus limbatus*, *Oreochromis mossambica*, *Hyporhamphus dussumieri*, *Liza macrolepis*, *Strongylura strongylura*, *Liza parsia*, *Microphis cunocalus*, *Liza tade*, *Scorpaenopsis leonine*, *Mugil cephalus*, *Grammoplites scaber*, *Sphyrna barracuda*, *Platycephalus indicus*, *Eleutheronema tetradactylum*, *Lates calcarifer*, *Polydactylus indicus*, *Ambassis commersoni*, *Acanthurus nigrofuscus*, *Ambassis gymnocephalus*, *Zebrasoma xanthurus*, *Epinephelus malabaricus*, *Callionymus fluviatilis*, *Epinephelus tauvina*, *Awaous gutum*, *Therapon jarbua*, *Glossogobius giuris*, *Sillago sihama*, *Oligolepis cylindriceps*, *Lactarius lactarius*, *Oxyurichthys tentacularis*

Crabs: *Paratelphusa hydrodromous*, *Matuta lunaris*, *Charybdis amboinensis*, *Calappa lophos*, *Scylla serrata*, *Portunus sanguinolentus*, *Portunus pelagicus*, *Charybdis feriata*, *Uca lactea annulipes*, *Dotilla myctiroides*

Prawns: *Macrobrachium idella*, *M. scabriculum*, *Metapenaeus brevicornis*, *M. dobsoni*, *M. monoceros*, *Parapenaeopsis styliifera*, *Penaeus indicus*, *P. merguensis*, *P. monodon*

Molluscs: *Scapharca inaequalis*, *Villorita cyprinoides*, *Turricula janna*

Birds: *Tachybaptus ruficollis*, *Phalacrocorax niger*, *Anhinga melanogaster*, *Egretta garzetta*, *Egretta gularis*, *Ardea cinerea*, *Ardea purpurea*, *Casmerodius albus*, *Mesophoyx intermedia*, *Bubulcus ibis*, *Ardeola grayii*, *Butorides striatus*, *Nycticorax nycticorax*, *Ixobrychus sinensis*, *Ixobrychus flavicollis*, *Mycteria leucocephala*, *Anastomus oscitans*, *Ciconia episcopus*, *Plegadis falcinellus*, *Threskiornis melanocephalus*, *Phoenicopterus ruber*, *Tadorna ferruginea*, *Nettapus coromandelianus*, *Anas poecilorhyncha*, *Anas crecca*, *Pernis ptilorhynchus*, *Milvus migrans*, *Haliastur indus*, *Ichthyophaga ichthyaetus*, *Circus aeruginosus*, *Pandion haliaetus*, *Quails Phasianidae*, *Pavo cristatus*, *Gallicrex cinerea*, *Porphyrio porphyrio*, *Hydrophasianus chirurgus*, *Metopidius indicus*, *Pluvialis fulva*, *Pluvialis squatarola*, *Charadrius dubius*, *Charadrius alexandrinus*, *Charadrius mongolus*, *Vanellus indicus*, *Gallinago gallinago*, *Limosa lapponica*, *Numenius phaeopus*, *Numenius arquata*, *Tringa totanus*, *Tringa stagnatilis*, *Tringa nebularia*, *Tringa ochropus*, *Tringa glareola*, *Xenus cinereus*, *Actitis hypoleucos*, *Arenaria interpres*, *Calidris temminckii*, *Calidris ferruginea*, *Glareola maldivarum*, *Glareola lactea*, *Larus ichthyaetus*, *Larus heuglini*, *Larus brunnicapillus*, *Larus ridibundus*, *Gelochelidon nilotica*, *Sterna aurantia*, *Sterna bengalensis*, *Sterna bergii*, *Sterna sandvicensis*, *Sterna hirundo*, *Sterna saundersi*, *Sterna acuticauda*, *Chlidonias hybridus*, *Butorides striata*, *Bubulcus ibis*, *Ciconia nigra*, *Ciconia ciconia*, *Ardea alba*, *Ardea intermedia*, *Botaurus stellaris*, *Platalea leucorodia*, *Pseudibis papillosa*, *Phalacrocorax fuscicollis*, *Ixobrychus cinnamomeus*, *Ixobrychus flavicollis*, *Gorsachius melanolophus*, *Calidris alba*, *Chloropsis cochinchinensis jerdoni*, *Larus fuscus*, *Pelargopsis capensis*, *Prinia subflava*, *Pycnonotus luteolus*

Butterflies: *Spialia galba*, *Borbo cinnara*, *Telicota ancilla*, *Pachliopta hector*, *Graphium agamemnon*, *Papilio demoleus*, *Papilio polytes*, *Papilio polymnestor*, *Catopsilia pomona*, *Eurema hecabe*, *Delias eucharis*, *Melanitis leda*, *Mycalesis perseus*, *Phalanta phalantha*, *Neptis hylas*

Dragon flies: *Brachytron pratense*, *Anax imperator*, *Orthetrum cancellatum*, *Sympetrum danae*, *Libellula saturata*, *Ictinogomphus australis*

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

Animals: *Scoliodon laticaudus*, *Anhinga melanogaster*, *Mycteria leucocephala*, *Ciconia episcopus*, *Threskiornis melanocephalus*, *Limosa lapponica*, *Numenius arquata*, *Calidris ferruginea* (NT); *Carcharhinus limbatus*, *Sphyrna zygaena*, *Pampus argenteus*, *Sterna aurantia* (VU); *Eleutheronema tetradactylum*, *Sterna acuticauda* (EN)

3.4 Major plant invasive alien species

Alternanthera philoxeroides, *Eichhornia crassipes*, *Pistia stratiotes*, *Sacciolepis interrupta*, *Salvinia molesta*, *Sesbania javanica*, *Sphaeranthus indicus*, *Spirodela polyrhiza*, *Utricularia aurea*, *Mimosa pudica*.

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	Fishing is the major activity of the people living in the coastal region of Ponnani. Fishermen in the wetland area are following the natural and traditional methods. Ponnani wetland produces a large amount of fishery resources and results in a major livelihood of the region. Karimeen (<i>Etroplus suratensis</i>), crab and Chemmeen (<i>Penaeus sp</i>) culturing is very active in some regions of Ponnani wetland.
Cultivation of aquatic food plants	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
For buffalo wallowing and use of domesticated animals	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not assessed quantitatively
Medicinal plants	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Medicinal plants like <i>Evolvulus alsinoides</i> , <i>Centella asiatica</i> and <i>Cynodon dactylon</i> were found in the wetland

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (up to 50 words for each category)
Is a recreational site/tourism	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Padinjarekkara beach offers a breathtaking view of the confluence of Bharathapuzha, the Thirur Puzha and Arabian Sea. The beach is famous for its natural beauty, bird watching, as migratory birds are often spotted here. Ponnani fishery harbour is situated near the estuary and the tidal port is an important fishing centre in the region. The tidal mouth of Bharathapuzha in Ponnani harbour, where Bharathapuzha and Tirur River join together to traverse into the Arabian Sea, is a seasonal home to hundreds of migratory birds and attracts a large number of bird watchers and ornithologists.</p> <p>‘Puzhayoram Sneha Patha’ is a walkway near to the Chamravattom Regulator bridge. Ponnani lighthouse situated on the bank of Bharathapuzha river is another attraction to tourists.</p>
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	<p>Ponnani is known as “Mecca of Malabar”. It is developed in the field of trade, transportation, and it is also a cultural centre.</p> <p>Ponnani is also an ancient port. Bharathapuzha was the major cultural point of Ponnani.</p> <p>Ponnani had a vast root of culture from those who came here and the</p>

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (up to 50 words for each category)
		<p>ones who ruled here. ‘Gujarat Samajam’ was among them.</p> <p>The Zamorins of Calicut made Ponnani their second capital as their naval chiefs Kunjali Marakars were originally from here. It is also the home of Sheikh Zainudin Makhdum who wrote the first anti colonial history from Kerala soil, <i>The Tufatul Mujahidin (Tributes to the Holy Warriors who resisted the Portuguese)</i> in the 16th century.</p>
Supports noteworthy plants species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports significant mangrove species like <i>Acanthus ilicifolius</i> , <i>Avicennia officinalis</i> , <i>Excoecaria agallocha</i> , <i>Rhizophora mucronata</i> , <i>Bruguiera cylindrica</i> including the plants mentioned in Section 3.1
Supports noteworthy animal species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports significant animal species which are of high conservation value such as <i>Scoliodon laticaudus</i> , <i>Anhinga melanogaster</i> , <i>Mycteria leucocephala</i> , <i>Ciconia episcopus</i> , <i>Threskiornis melanocephalus</i> , <i>Limosa lapponica</i> , <i>Numenius arquata</i> , <i>Calidris ferruginea</i> (NT); <i>Carcharhinus limbatus</i> , <i>Sphyrna zygaena</i> , <i>Pampus argenteus</i> , <i>Sterna aurantia</i> (VU); <i>Eleutheronema tetradactylum</i> , and <i>Sterna acuticauda</i> (EN) including the animals as mentioned in section 3.2
Site of high congregation of migratory water birds	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	High congregation of migratory birds like <i>Gallinago gallinago</i> , <i>Limosa lapponica</i> , <i>Numenius phaeopus</i> , <i>Numenius arquata</i> , <i>Tringa totanus</i> etc. were observed in the wetland area
Supports life cycle of fish or amphibians	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Estuarine and freshwater fishes are supported here along with Molluscs
Mining	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (up to 50 words for each category)
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	Fishing is the major activity of the people living in the coastal region of Ponnani for their dietary needs and daily sustenance. Fishermen in the wetland area are following the natural and traditional methods.
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 type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	-
Withdrawal of water for domestic use	<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
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	-

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)
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 type="checkbox"/> No <input checked="" type="checkbox"/> Not assessed	Boating has been permitted near the estuary in Ponnani as part of encouraging water tourism. At present, five boats are conducting services here.
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
Pollution	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Ponnani wetland has been subjected to ecological degradation due to increasing human intervention. Slaughter houses and household wastes are dumped into the wetland.
Unsustainable harvest of biological resources	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Overexploitation of fishery resources is noticed here
Mining	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Present <input type="checkbox"/> Potential	No data available
Siltation	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Quantitative assessment required
Encroachment	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Quantitative assessment required
Spread of invasive species	<input type="checkbox"/> High <input type="checkbox"/> Medium	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Quantitative assessment required

Threat	Degree	Present or Potential	Additional information, if any
	<input checked="" type="checkbox"/> Low		
Degradation of Mangrove ecosystem	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Murikummadu area of Ponnani wetland faces an important ecological threat due to the destruction of mangroves.
Sea Erosion in Ponnani	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Lack of protection for sea erosion in the Ponnani coastal area of the estuary is a major problem.

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

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
Large scale withdrawal/Fragmentation/impoundment/diversion or any other hydrological interventions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Within the wetland	Wetland Management Unit (WMU), SWAK, Irrigation Department, and KCZMA in CRZ areas.	Need to get prior permission from the WMU/SWAK and KCZMA in CRZ areas.
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	WMU, SWAK, KSPCB, KCZMA in CRZ areas	Prior permission from the Wetland Management Unit/SWAK and KCZMA in CRZ areas is required.

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
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	Applicable within the wetland only	Wetland Management Unit, SWAK, Fisheries Department, Agriculture Department	Prior permission from the Wetland Management Unit/SWAK and KCZMA in CRZ areas is required to ensure that the activity will not hamper the wetland ecosystem health
Large scale sand mining and silt removal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Applicable within the wetland only	WMU, SWAK, Revenue Department, LSGs and KCZMA in CRZ areas.	Prior permission from the WMU/SWAK and KCZMA in CRZ areas is required
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	

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

Sushama, S. (2014). Biodiversity of Ponnani estuary, Kerala. *J. Aqua. Bio and fisheries*, 2, 785-791.

Sheeja, P. S., Vishnu, B., & Gokul, A. A. (2020). Erosion Trend Analysis of Coastline along Ponnani Region Using Multitemporal Images. *Int. J. Curr. Microbiol. App. Sci*, 9(3), 2606-2617.

Kumar, A. B. (2006). A checklist of avifauna of the Bharathpuzha river basin, Kerala. *Zoos' Print Journal*, 21(8), 2300-2355.

Division of Environmental Science, Department of Botany, University of Calicut (2020). Final Technical Report: Eco Restoration of Ponnani Kole Wetlands through community participation.

Ishak, M. P., & Azeez, P. A. (2020). A comparative analysis of the avifauna of kalpathy puzha, kunthipuzha and Nila River basins. *International Journal of Zoology Studies*, Volume 5; Issue 2; 2020; Page No. 19-26.

Subramanian, S. V. (2021). The Architectural Tradition of Ponnani, Kerala: A Historic Malabar Port Town. *Journal of Traditional Building, Architecture and Urbanism*, (2), 385-396.

CWRDM (2016), Preparation of Detailed project Report of Selected Wetlands of Kerala, Interim Report Ponnani Wetland. Center for Water Resources Development and Management, Kozhikode.

Jyothi, P. V., & Sureshkumar, S. (2014). Preliminary documentation of aquatic Macrophytes of Kole wetlands of Northern Kerala, India. *International Journal of Environmental Sciences*, 5(1), 117-122.

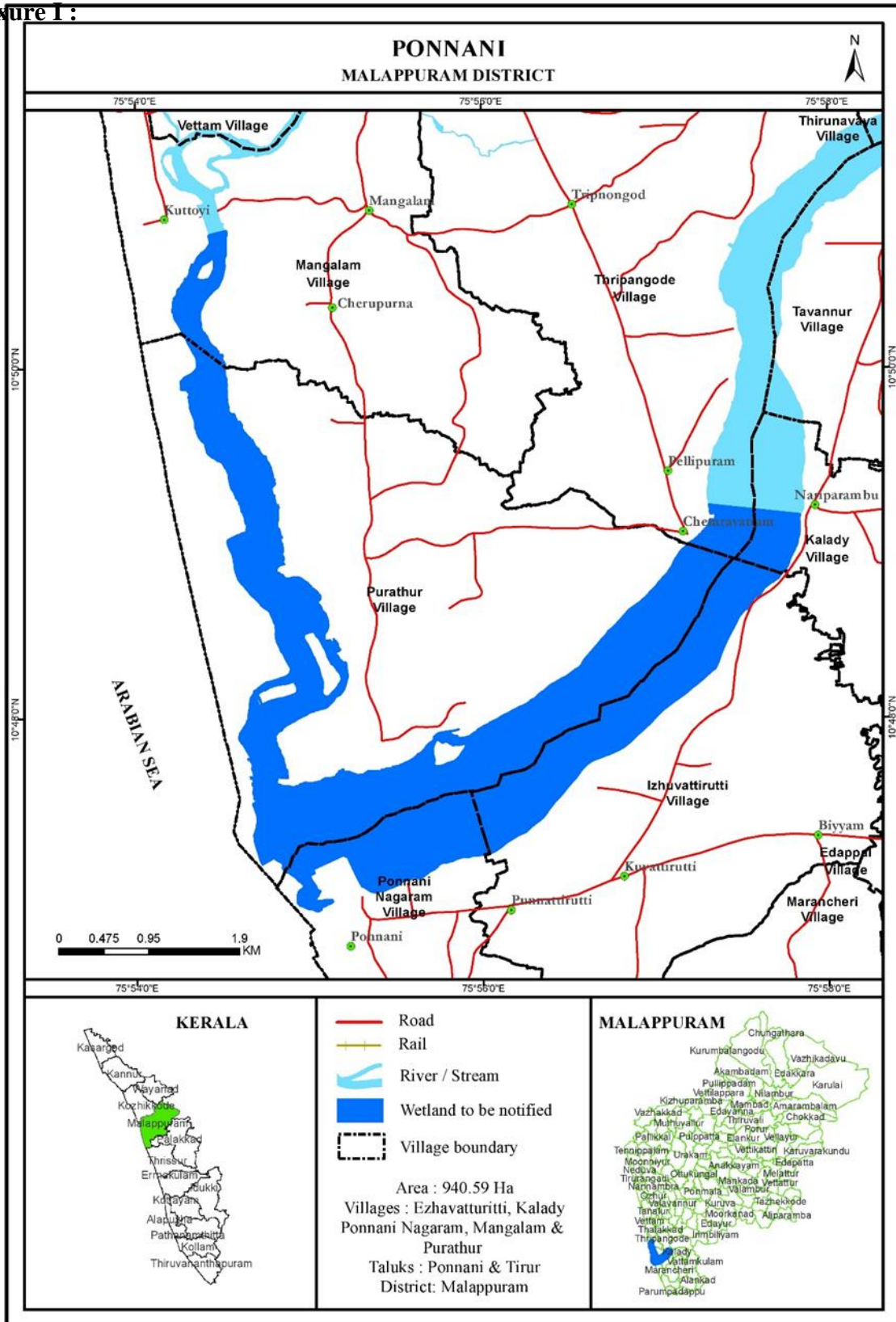
Kumar, P. K. (2018). A Study of Invasive Alien Plant Species of Kuttadan Kole Wetlands of Thrissur District, Kerala. *Int. J. Environment, Agriculture and Biotechnology*, 3(6), 2198-2200.

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 :

