

BRIEF DOCUMENT OF SASTHAMKOTTA LAKE

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) : **Sasthamkotta Lake**

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

Villages : Sasthamkotta, Mynagappally & West Kallada
Taluk : Kunnathur
Panchayats : Sasthamkotta, Mynagappally, West Kallada

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

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

: Latitude: From **9°1'45.885"N** to **9°3'28.397"N**

: Longitude: From **76°36'43.072"E** to **76°38'52.318"E**

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

: Local Self Governments, Irrigation Department and State Wetland Authority Kerala.

Section 2: Site Characteristics

2.1 Area of wetland / wetlands category (ha) : **360.95** ha.

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

Category	Subcategory
<input checked="" type="checkbox"/> Natural (Inland)	<input checked="" type="checkbox"/> Permanent lakes

Category	Subcategory
	<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 type="checkbox"/> Natural (Coastal)	<input type="checkbox"/> Coastal lagoon <input 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 below mean sea level) : Average – 5, Maximum -13

2.4 Elevation (m above mean sea level) : 20 to 50 (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) : 2251.57
b) Temperature (°C) : Minimum - 22, Maximum - 33
c) Humidity (%) : Minimum - 63%, Maximum - 87 %

2.7 Area of zone of influence (in ha) : 1124.89

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

Forests : 0.00
Plantation : 1.82
Agriculture : 15.55
Settlements (Rural) and (Urban) : 50.53
Water body : 32.10
Industrial : 0.00

2.9 Map of wetland complex and zone of influence

(To be enclosed as Annex I and II to this proposal): To be provided by KSREC

Section 3: Biodiversity

3.1 Notable plant species present in wetland

Aponogeton natans, *Blyxa octandra*, *Colocasia esculenta*, *Hydrilla verticillata*, *Hygroryza aristata*, *Ipomoea aquatica*, *Limnophila heterophylla*, *Monochoria vaginalis*, *Nymphaea nouchali*, *Nymphoides indica*, *Oryza rufipogon*, *Paspalidium geminatum*, *Utricularia reticulata*, *Vallisneria spiralis*

Patches of Screw Pine (*Pandanus odoratissimus*) exist near the Velanthara embankment. The eastern shoreline has patches of the insectivorous plant, Indian Sundew (*Drosera* sp.). Macrophyte distribution is largely confined in the regions adjoining Velanthara embankment, Rajagiri, Bharanikavu and Sasthamkotta Town. These areas are also significant sources of pollution into the lake. *Vallisneria*, *Salvinia* and *Blyxa* are the dominant amongst submerged macrophytes, whereas, *Ipomoea* and *Nymphoides* form the dominant floating forms. *Monochoria* and *Hygrophylla* often mix with *Colocasia* and *Pandanus* to form thick vegetation growth.

Phytoplanktons : Bacillariophyceae, Chlorophyceae, Cyanophyceae and Dinoflagellata. *Cocconeis* sp., *Fragilaria* sp., *Melosira* sp., *Nitzschia* sp., *Navicula* sp. and *Synedra* sp.,

3.2 Notable animal species present in wetland

Fishes: *Etroplus suratensis*, *Pseudetroplus maculatus*, *Parambassis dayi*, *Channa diplogramma*, *Channa pseudomarulius*, *Channa striata*, *Dawkinsia filamentosa*, *Mystus oculatus*, *Ompok malabaricus*, *Horabagrus brachysoma*, *Horabagrus brachysoma*, *Xenentodon cancila*, *Aplocheilus lineatus*, *Dayella malabarica*, *Macrognathus guentheri*, *Nandus nandu*

Waterbirds: Egrets, Herons, Bitterns, Sandpipers and Lapwings

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

Fishes: *Parambassis dayi*, *Channa pseudomarulius* (NE), *Horabagrus brachysoma*, *Channa diplogramma* (VU).

Waterbirds: Oriental Darter and Black-headed Ibis. A sporadic sighting of Asian Woolly Neck (*Ciconia episcopus*), a vulnerable waterbird species, was reported in 2015 by Sasthamkotta Biodiversity Management Committee.

3.4 Major plant invasive alien species

Mats of *Salvinia molesta*, *Eichhornia crassipes* and *Pistia stratiotes* have been recorded in post monsoon seasons along the shorelines.

3.5 Major animal invasive alien species

Not recorded

Section 4: Ecosystem services

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (upto 50 words for each category)
Source of drinking water for people living and around	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sasthamkotta Lake caters largely to the District of Kollam as a source of drinking water. 10.9 Mm ³ is withdrawn from the lake to support half a million people of the City of Kollam. Withdrawal of another 12.2 Mm ³ also supports the surrounding 7 Panchayats.
Source of water for agriculture	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Low scale agricultural practices around the lake use water from the lake.
Fisheries	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Nearby inhabitants are using the fishery resource for their livelihood
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	-
Is a recreational site	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sasthamkotta is distinct for its placid waters surrounded by lush green hills. Therefore, it provides scenic beauty to tourists and locals.
Buffering communities from extreme events as floods and storms	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Groundwater recharge	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Nearby inhabitants are sufficiently dependent on well waters which are mainly recharged by the lake.
Water purification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
Acts as a sink for sediments	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Siltation is reported in the lake.
Has significant cultural and religious values	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The region around the lake has high cultural value. The lake is believed to have been named after the local deity, Lord Sastha, who has a temple adorning the shoreline. The new moon day of each month is considered auspicious, drawing a large number of locals to the temple and to the lake. Besides, Ammankovil Devi or Bhadrakali temple situated in

Importance	Relevant for the site (please tick yes or no)	If Yes, Details (upto 50 words for each category)
		Sasthamkotta Mannakkara, Thalayinakkavu Shiva Parvathi Temple, Poruvazhy Peruviruthi Malanada Duryodhana Temple, and Anayadi Narsimhaswamy temple are significant religious sites located around the lake. Mount Horeb Ashramam, a monastic community of the Malankara Orthodox Church, was established in 1991 on the banks of Sasthamkotta.
Supports noteworthy plants species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	37 phytoplankton, 18 macrophytes and 158 terrestrial vegetation species have been recorded from the lake.
Supports noteworthy animal species	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Available records indicate the presence of six genera of zooplankton, 23 insect species (butterflies), 16 fish and 35 waterbird species.
Site of high congregation of migratory water birds	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sandpipers and lapwings are found
Supports life cycle of fish or amphibians	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Supports life cycle of fishes as mentioned in section 3.2
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 (upto 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	Local peoples use the fishery resources for their livelihood and dietary requirements
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	-

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 (upto 50 words for each category)
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	-
Religious practices	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not assessed	Several important sacred sites, including the Sastha Temple, are located on the banks of the lake and around it. The lake has high religious value and is used for holy dip every year.
Withdrawal of water for domestic use	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not assessed	The Quilon Water Supply Scheme (QWSS) withdraws 10.9 Mm ³ from the lake to support half a million people in the City of Kollam. In addition, 12.2 Mm ³ are also withdrawn from the lake daily to provide for the water supply needs of communities living within Chavara, Panmana, Sasthamkotta, Sooranad, West Kallada, Thevalakkara and Thekkumbhagam grama panchayats.
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 type="checkbox"/> Not assessed	Local country boat ferry service is present here. House boats are plying for tourism purposes.
Any other, please list here	<input type="checkbox"/> Yes <input 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 (upto 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
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	Most of the lateritic hillocks around the lake, which has the capability of storing groundwater and releasing that to the lake during the non-monsoons periods are being mined for building materials and affected the lake inflow. Quantitative assessment need to be done.
Pollution	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Littering of plastics and domestic sewage discharge in the lake are reported.
Mining	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	Mining has adversely impacted the hydrological connectivity of the lake with its drainage basin and river floodplains. As a result, water regimes have shifted from multiple inflow sources to being governed largely by monsoon.
Siltation	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	The human intervention in the lake catchment is leading to high sedimentation and siltation which will lead to reduction in lake storage.
Encroachment	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Present <input type="checkbox"/> Potential	The slopes have been encroached for Tapioca, Rubber and other plantations, and runoff and sedimentation enhancing agricultural practices.
Spread of invasive species	<input type="checkbox"/> High	<input checked="" type="checkbox"/> Present	Presence of 3 common aquatic invasives such as <i>Salvinia</i>

Threat	Degree	Present or Potential	Additional information, if any
	<input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	<input type="checkbox"/> Potential	<i>molesta</i> , <i>Eichhornia crassipes</i> , <i>Cabombo caroliniana</i> are reported in the lake and the spread is increasing in its trend.
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	Place a tick mark if relevant	Prohibition within wetlands or zone of influence	Level of Prohibition (in terms of people, restricted area or any other)	Name of department / agency responsible for Prohibition	Additional information, if any
	<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 checked="" type="checkbox"/> Zone of influence	The wetland and its whole catchment has to be regulated for this activity	SWAK, Wetland Management Unit (WMU), Irrigation Department	Large scale hydrological interventions need prior permission from the WMU/SWAK
Discharge of treated sewage/ effluent / wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input checked="" type="checkbox"/> Zone of influence	The wetland and its whole catchment has	SWAK, Wetland Management Unit,	Need to get prior permission from

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
			to be regulated for this activity	Irrigation Department, KSPCB, LSGs	WMU/SWAK
Construction of boat jetties, and facilities for temporary use, as pontoon bridges	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input type="checkbox"/> Zone of influence	Within the wetland	SWAK, Wetland Management Unit, Irrigation Department, LSGs	Prior permission is to be taken from the WMU/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	SWAK, Wetland Management Unit, Agriculture, Fisheries Department, LSGs, District Collector	Large scale commercial level activities need to get prior permission from the Wetland Management Unit/SWAK
Soil erosion and silt removal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetland complex boundary <input checked="" type="checkbox"/> Zone of influence	Activities causing soil erosion & siltation has to be regulated within the wetland and catchment.	SWAK, Wetland Management Unit, Soil Conservation Department, LSGs,	Large scale removal need to get prior permission from WMU/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
Traditional community level sustenance fishing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetland / Wetlands complex boundary <input checked="" type="checkbox"/> Zone of influence	Will ensure the proper conservation of the lake with community participation and it is ensuring the use value of the wetland

Section 10: Listing of Available Scientific Resources Used

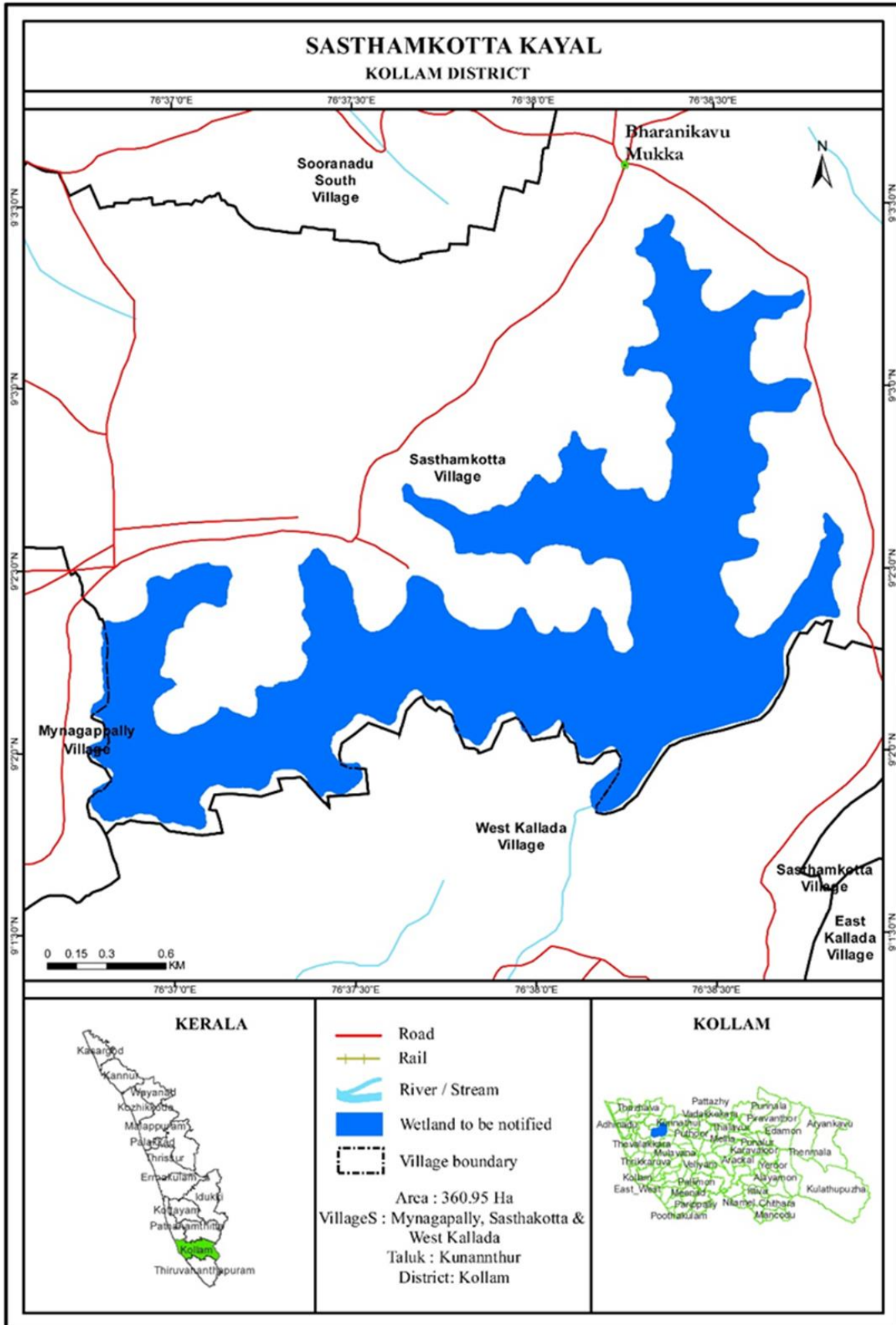
1. Raghavan, R., Renjeet, K and Ali, A., 2021, Current status of fish diversity of Sasthamkotta Lake with particular focus on Pearl Spot, *Etroplus suratensis* (Interim project report submitted to SWAK)
2. CWRDM, 2010. Sasthamkotta Wetland: Management Action Plan. Centre for Water Resources Development and Management (CWRDM), Kozhikode
3. DoT, 2014. Kerala Tourism Statistics 2014. Kerala: Research and Statistics Division, Department of Tourism (DoT), Government of Kerala.
4. George, A. V. and Koshy, M., 2008. Water quality studies of Sasthamkotta Lake of Kerala. *Pollution Research*, 27(3), pp. 419-424.
5. Nayar, M. P., Alexander, T. and Thushara, L., 2011. Biodiversity and Conservation of Sasthamkotta Fresh Water Lake of Kerala. Dehradun: Bishen Singh Mahendra Pal Singh.
6. Raghavan, R., Renjeet, K and Ali, A., 2021, Current status of fish diversity of Sasthamkotta Lake with particular focus on Pearl Spot, *Etroplus suratensis* (Interim project report submitted to SWAK)

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 :

