



TAMILNADU FOREST DEPARTMENT
MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY,
RAMANATHAPURAM DISTRICT
(PERIOD: 2023 – 2024 To 2032 – 2033)
(Ratification APO Period: 2022 – 2023)



PREPARED BY
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INTRODUCTION

Sakkarakottai Bird Sanctuary is a unique mosaic wetland ecosystem located close to Gulf of Mannar on the Central Asian flyway which is a regular route for the migratory birds. The Sakkarakottai Bird Sanctuary is home to about 116 species of birds of which about 5 are near threatened species. This bird sanctuary acts as a breeding and feeding ground for several Resident/Resident-Migrant species of waterfowl. The sanctuary vegetation is mostly tropical dry deciduous type and thorny shrub jungle. It is dominated by Babul (*Acacia nilotica*). This bird sanctuary is ecologically and culturally very important. There is rich cultural history associated with the sanctuary. Local indigenous communities revere the sanctuary as cultural heritage. Various activities like habitat management, eco development, eco tourism, Nature Education Camps etc. have been proposed to conserve this unique ecosystem as well as create awareness among the public about the usefulness and inevitability of such ecosystem.

The proposed Management Plan has come up in good way which serves the purpose of protection and conservation & development of Sakkarakottai Bird Sanctuary. Community participation, through eco-development approach, is a basic principle for overall management of the sanctuary. I believe this Management Plan will be effective not only for conservation of Sakkarakottai Bird Sanctuary but also for the development of the villages situated in the vicinity of the sanctuary.

Wildlife Warden,
Wildlife Division,
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THE EXECUTIVE SUMMARY

The Sakkarakottai Bird Sanctuary is spread over a total area of 2.3949 Square Kilometers. It is bestowed with extraordinary scenic beauty and landscape. The sanctuary is home for many important endemic and near threatened species including the Painted stork, Black-headed ibis, Spot-billed pelican, Oriental darter and Pallied harrier among others. The sanctuary also harbours rich biodiversity particularly among the lower vertebrate groups such as amphibians and reptiles (herpatofauna) as well as invertebrates. This sanctuary is also rich in avifauna. This management plan is aimed at conserving this natural resource and to develop such facilities that will enhance the non-consumptive utilization of the sanctuary such as eco-tourism, education and research. The objectives of management can be briefly summarized below:

1. To conserve and protect the habitat, so that endangered and endemic flora and fauna inhabiting the area are adequately protected and propagated.
2. To maintain and wherever necessary restore the physical integrity of the area in addition to restoring the degraded portion of the sanctuary.
3. To create awareness among the people in general and the children in particular about nature and wildlife with particular emphasis on the ecological role of the sanctuary area.
4. To maintain and develop tourism for recreation, education and scientific exploration without affecting the sensitive ecosystem adversely.
5. To reduce the dependence of the people on forest based resources in the zone of influence, with sensitivity to cultural and economical well being of the communities, through eco-development activities
6. To provide for capacity building for efficient management of the sanctuary through better training of staff and infrastructure.
7. To promote scientific and ecological research or studies that will help the sanctuary management in assessing the physical and biological resources, planning for conservation of these resources and monitoring the health of the habitat.

The major problems facing the sanctuary management which adversely affect the achievement of these objectives include inadequate staff, lack of basic infrastructural facilities and limited funding. Despite the richness of the shola forests and natural beauty, the facilities for eco-tourism are grossly inadequate. The efforts of education and awareness generation have been less than adequate.

The present management plan has been compiled following the manual for planning wildlife management in protected areas and managed forests by Wildlife Institute of India.

It comprises of three parts; Part One dealing with four chapters: Chapter 1- Introduction to the area, Chapter 2- Background information & attributes, Chapter 3- History of management & present practices and Chapter 4- The Protected Area & the interface Land use situation. Part Two deals with the rest of the seven Chapters namely: Chapter 5- Plan objectives and problems, Chapter 6- The Strategies, Chapter 7- Tourism, interpretation and Conservation Education, Chapter 8- Eco-development, Chapter 9- Research, Monitoring & Training, Chapter 10- Organization and Administration and Chapter 11- The Budget. Part three comprises of various Annexures and control forms pertaining to the management of the sanctuary.

In Chapter 6 (The Strategies), the sanctuary has been divided into three zones, namely, core zone, tourism zone and buffer zone and strategies have been identified for these zones. Theme plans have been developed for the sanctuary area for protection from poaching, fire protection, soil and moisture conservation and water management, birds health surveillance, man-animal coexistence and development of infrastructure and communication.

The Chapters 7, 8 & 9 that deal with Tourism, Eco-development and Research and Monitoring have proposed various measures for conducting these activities. Chapter-10 deals with the present and proposed staff that would be required for effective management of the sanctuary. Chapter-11 deals with the budget that would be required both at central and state level for fulfilling these activities.

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I am thankful to the technical committee constituted for providing advice for drafting the management plan. The committee consisted of Dr. S. Balachandran, Bird expert, Bombay Natural History society, Ravindran Natarajan, Bird expert, Irugukul Amritha Nature trust, Chandrashekhar, Bird expert, a life member of BNHS and MNS and H Byju, Centre of Advanced Study in Marine Biology, Annamalai University.

The process of writing the Management Plan started with Thiru. K. Baskaran, Draughting Officer, Ramanathapuram Wildlife Division. The draft documents were of great help and I duly acknowledge his contribution.

I duly acknowledge the inputs from field, particularly by Forest Range Officer, Sakkarakottai Sanctuary and also from other field staff including the Forester, the Guards and other staff which greatly helped in prioritizing the strategies in the management plan. I also thank my office staff for their help in preparing the management plan.

I express my sincere thanks to all local people, officers of various departments' whose ideas and suggestions in one form or another have helped in framing some of the strategies of this plan.

Wildlife Warden,
Wildlife Division,
Ramanathapuram

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1. INTRODUCTION OF THE AREA

1.1. Name, Location, Constitution and Extent of Area

Sakkarakottai Birds Sanctuary located at 9°21'8" N latitude and 78°48'50" E longitude, is part of Sakkarakottai, Rajasuriyamadaï and Achadipirambu villages of Ramanathapuram Taluk, Ramanathapuram district of southern Tamil Nadu. The location of sanctuary is illustrated in *Map 1*.

Sakkarakottai tank was dug in the year 1321 A.D by way of participation by the community called 'Kudimaramattu'. The architect behind the construction of the tank was Thiru. Sakkarethevan who headed the community or people who were involved in digging the pond and hence the name 'Sakkarakottai' came in vogue to the tank. Thiru. Suryathevan was the man responsible for digging the inlet channel or the feeder channel in 1412 A.D from or close to Periyakanmoi near Sittur village. The inlet channel bringing water to Sakkarakottai is hence name as 'Suryathevan channel'

For the 1st time the tank was surveyed and boundaries were fixed in the year 1622 A.D by KoothanSethupathy, the King of Ramanathapuram. In the year 1635 A.D and subsequently the lands adjoining the Sakkarakottai tank was cleared of trees for development of agricultural lands by Thiru. KoothanSethupathy. In the year 1674 A.D, the then king of Ramanathapuram, Thiru. Kilavan Sethupathy created the sluice gates for the tank to be utilized for agriculture. In the year 1711 A.D the tank was further deepened by Thiru. Vijayareghunatha Sethupathy, King of Ramnad and water holding capacity was enhanced to its maximum.

The Sakkarakottaikanmai area was declared as a bird sanctuary in the year 2012, with an estimated area of 230.49 ha (S.F. No. 68, 383, 209 & 25) in Sakkarakottai, Rajasuriyamadaï and Achadipirambu villages. It is notified as a sanctuary within the meaning and scope of Section 18 (1) of Wildlife Protection Act 1972, through the G.O. Ms. No.114; E&F (FR.5) dated 17.04.2012 and appeared in the Gazette Part II on Page No. 231 on 09.05.2012 (*Annexure I*). The Field Measurement Book extract showing the boundary of the tank is given in **Annexure 1A**.

The sanctuary is managed as a single unit and there are no ranges or sections delineated within. A notable feature of the sanctuary area is that there is no growth of large growing trees within the tank except for a few hundred *Acacia nilotica* trees planted during

2013-14 & 2014-15. The sanctuary can be identified as one compact seasonally perennial water body in the Survey of India toposheet 1:50,000 NO: 58 K/15.

1.2. Approach and Access

The sanctuary is only approachable by road; sanctuary is 130 Km. away from Madurai. The nearest town is Ramanathapuram at 2 Km. distance from the bird sanctuary. It is also connected by train; because of the sanctuary area is very nearest to the Ramanathapuram railway station. This is also important junction place for East coast road (Ramanathapuram to Tuticorin) and Ramanathapuram – Rameshwaram National Highway Road. The nearest airport is Madurai. **For Contact** - Wildlife Warden, Gulf of Mannar Marine national Park, Collectorate Post, Mandabam Road, Ramanathapuram – 623 503.

Ph.No: 04567 – 230079, Email – gommnp@gmail.com

1.3. The Statement of Significance

The values of Sakkarakottai Bird Sanctuary are related to biodiversity richness, economic benefits, culture, catchment, human ecology, aesthetic significance and potential for scientific studies.

1.3.1. Locational value

Sakkarakottai Birds Sanctuary being part of the Madurai – Ramanathapuram Tank Country bestowed with numerous rainfed irrigation tanks, occupies the apex position in providing ideal nesting grounds for the winter migratory heronry species and colonial water birds.

1.3.2. Ecological value

The sanctuary offers conducive feeding grounds for the birds especially the migratory ones. The sanctuary offers great expanse of water spread area with deep and shallow depths.

1.3.3. Cultural value

Traditionally, people living in villages around Sakkarakottai wetland (bird sanctuary) have realized the significance of water birds, especially the bird droppings (guano), which they found to be more effective as a natural fertilizer, for their agricultural yield, over chemical pesticides. Hence, they were known to aggressively protect the birds and can be used in wise use of wetland, through participatory methods and educational awareness.

Sakkarakottai villagers have understood the importance of their wetland, functional significance of the birds which visit (migrants) or are residents in the sanctuary, from a very long time. A noteworthy aspect is, the bird dropping enriched water, which they have used effectively in agriculture. Hence, it is this interaction and long perseverance of the local people that has managed to sustain the wetland. This aspect must be used efficiently for the wise use of this wetland and preserving its ecological status.

Traditionally, the villagers have protected birds as they have realized the importance of bird droppings in agriculture and thus their economy. Sentiments associated with bird protection have been observed across all class and caste barriers in the village. Within the immediate periphery of the sanctuary, there is an old Amman temple used for worshipping by the villagers. A small temple dedicated to human being deity, was also observed in the vicinity of the sanctuary.

1.3.4. Economic value

The sanctuary, that includes the earthen embankments, bunds and the resultant seasonally water holding marshy lake is equally beneficial for the birds as well as the villagers. Excess water that is stored during rainy season within the bunds is later utilized for agricultural purposes. The sanctuary acts as a store space for an efficient flood control, flood storage mechanism. It acts as a sediment control ground that prevents stream carried silt and urban residues from being divulged into the agricultural lands. The sanctuary is a control measure for the naturally occurring soil erosion. It is also acts as a natural system of nutrient removal from agricultural runoff and waste water systems.

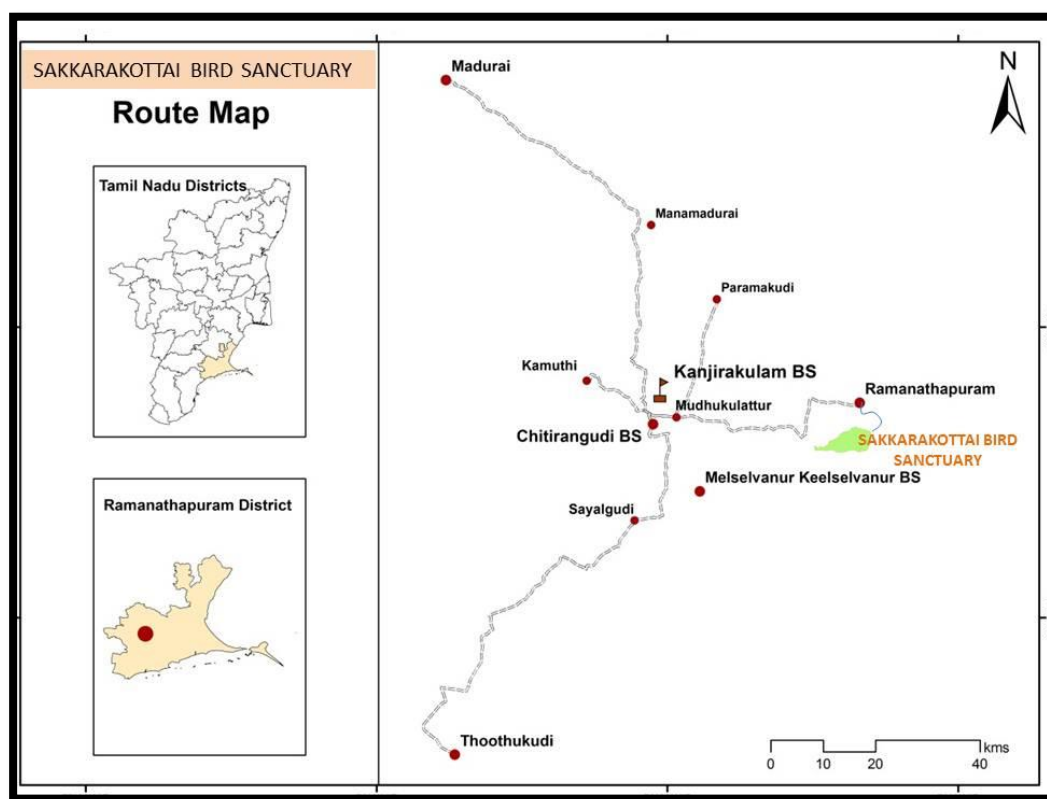
1.3.5. Tourism value

The sanctuary offers immense opportunity for eco-tourism based bird watching. Birds that are difficult to site elsewhere are known to come close to human habitations thereby making Sakkarakottai an abode of bird watchers and ornithologists.

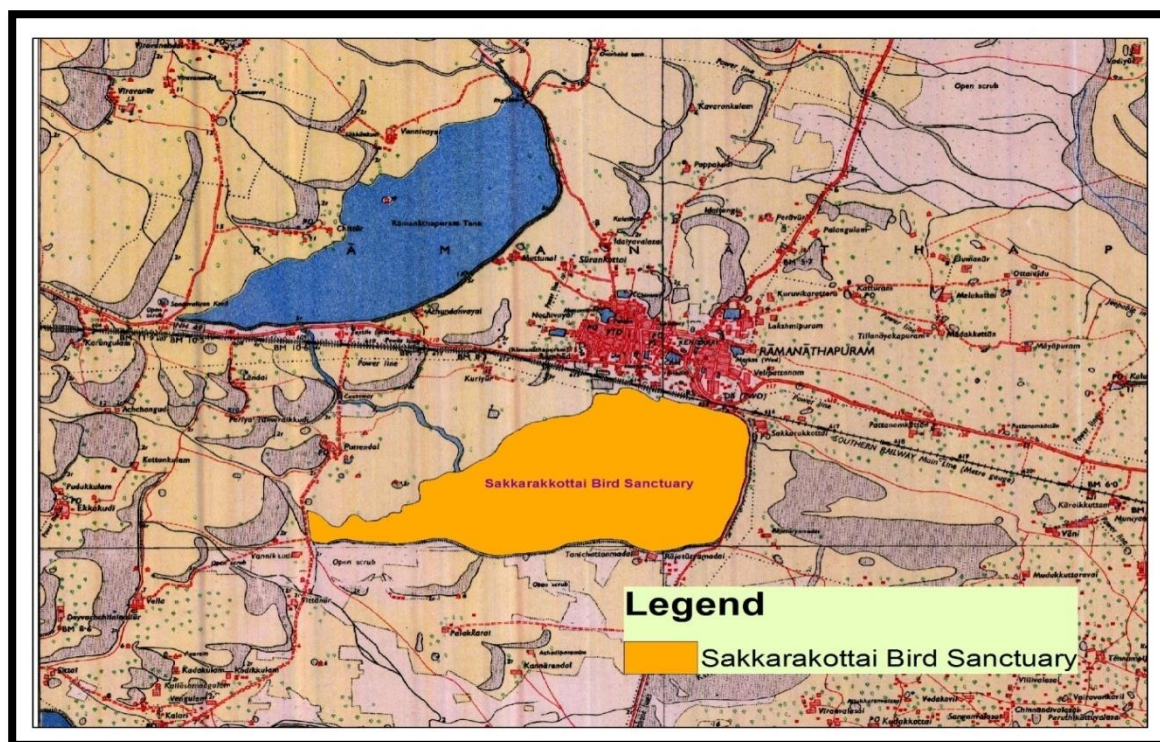
1.3.6. Scientific value

The sanctuary offers excellent possibilities for scientific research in Birds and their habitat. It offers unique opportunities for research, education and nature interpretation.

MAP No. - 1. LOCATION MAP OF SAKKARAKOTTAI BIRD SANCTUARY



MAP NO. 1(a): LOCATION MAP OF SAKKARAKOTTAI BIRD SANCTUARY SUPERIMPOSED ON THE SURVEY OF INDIA TOPO SHEET OF 1: 50,000 SCALE



2. BACKGROUND INFORMATION AND ATTRIBUTES

2.1. Boundaries

The sanctuary boundaries can be defined as two kinds, legal and ecological. Legal boundaries of the sanctuary are defined in terms of physically identifiable survey stones. Ecological boundaries are defined in terms of the ecological continuum that the sanctuary forms as individual nesting site for birds and also in association with other similar or less important tanks adjoining the sanctuary that provide feeding and nesting grounds for the birds.

2.1.1. Legal boundaries

The Sakkarakottai Bird Sanctuary is notified under section 18 (1) of the Wildlife Protection Act, 1972 and made as sanctuary through the G.O. Ms. No.114, E&F (FR.5) dated 17.04.2012. The notification appeared in the Gazette Part II on Page No. 231 on 09.05.2012. Refer **Map 2** for legal boundaries. The boundary description, provided in the G.O (**Annexure 1**) is given as follows,

North: Starting from trijunction points of S. Nos.66, 50, 49 it runs towards southern side along the western boundary Ramanathapuram to Keelakarai Road having S.No. 92 of village No.49 Sakkarakottai village.

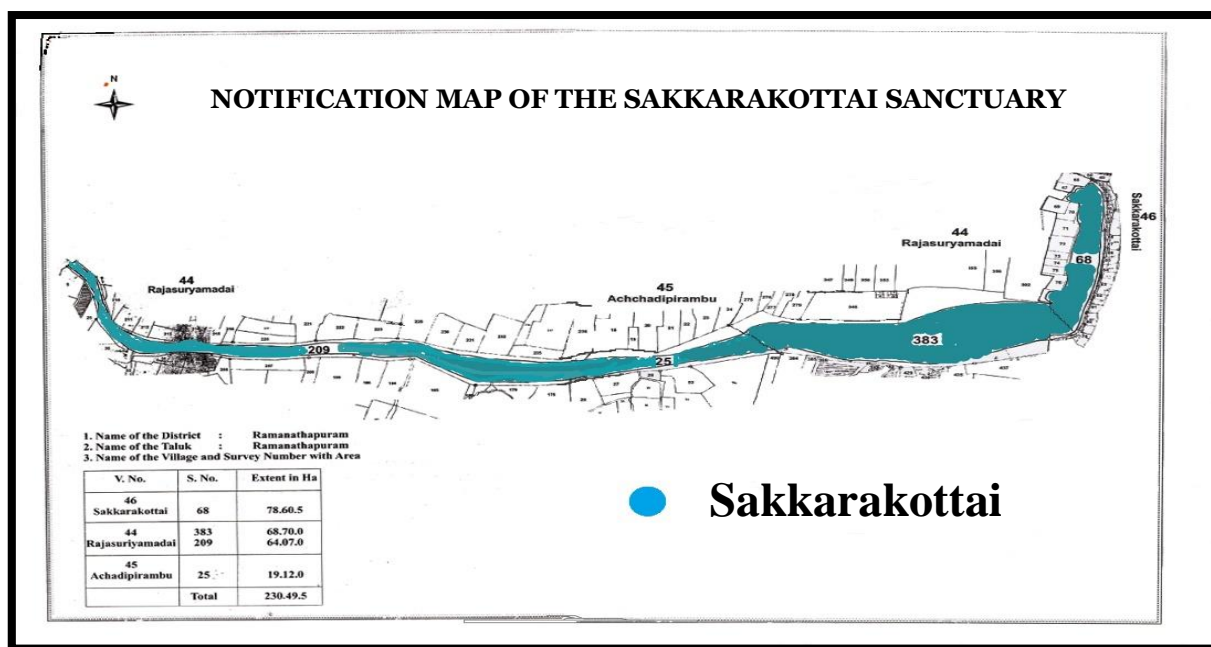
East: Thence the boundary runs towards southern side along the western boundary of S. Nos. 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, and 79 of Ramanathapuram to Keelakarai road of village No. 49 Sakkarakottai village.

South: Thence the boundary runs towards western side along the northern boundary of S.No. 77 of Ramanathapuram to Keelakarai road of village No.49 Sakkarakottai village and meets the trijunction points of village No. 49 Sakkarakottai village and village No.44 Rajasuryamadai village. Thence the boundary runs towards western side along the northern boundary of S. Nos. 437, 435, 430, 429, 388 (Urani) 387, 386 (Northern side of uppuudaippuurani) 385, 384, 490 of village No.44 Rajasuryamadai village and meets the trijunction points of village No. 44 Rajasuryamadai and village No.45 Achadipirambu villages. Thence the boundary runs towards western side along the northern boundary of survey No. 54, 53, 28, 27, 26 of the village No. 45 Achadipirambu village and meets the bijunction points of village No.45 Achadipirambu village and village No.44 Rajasuryamadai villages. Thence the boundary runs towards western side along the northern boundary of S.Nos. 175, 179,

185, 180, 184, 198, 199, 200, 207, 208, 59, 58, 55, and runs towards north west side and north east boundary of S.No. 26 of village No. 44 Rajasuryamadai. Thence the boundary runs towards northern side and north east boundary of S. Nos. 25, 10 and 5 of village No. 44 of Rajasuryamadai and meets the bijunction points of village No. 44 Rajasuryamadai and Puttendal village.

West: Thence the boundary runs towards north eastern side and turns to south western side of Puthandal village. Thence runs towards southern side along the western boundary of S.No.210 and runs towards eastern side along the southern boundary of S. Nos. 211, 212, 213, 214, 215, 216, 220, 221, 222, 223, 225, 230, 231, 232, 235, 236 and meets the bijunction points of village No.44, Rajasuryamadai and village No. 45 Achachadipirambu villages. Thence runs towards eastern side along the southern boundary of S.Nos. 18, 19, 20, 21, 22, 23, 24 of village No. 45 Achachadipirambu village and meets the points of village No. 45 Achadipirambu and village No.44 Rajasuryamadai village. Thence runs towards north eastern side along the southern boundary of S.Nos. 275, 276, 277, 278, 279, 348, 349, 350, 353, 355, 356, 382 of village No. 44 Rajasuryamadai village and meets the bijunction points of village No.44 Rajasuryamadai and village No.49 Sakkarakottai villages. Thence the boundary runs towards northern side along the eastern boundary of S.No. 382 of village No.44 Rajasuryamadai and S.Nos. 76, 75, 74, 73, 72, 71, 70, 69, 67 and 66 of village No.49 Sakkarakottai village and S.No.366 of village No.44 Rajasuryamadai village and thence joins the starting point.

MAP 2: LEGAL BOUNDARY MAP OF SAKKARAKOTTAI BIRD SANCTUARY



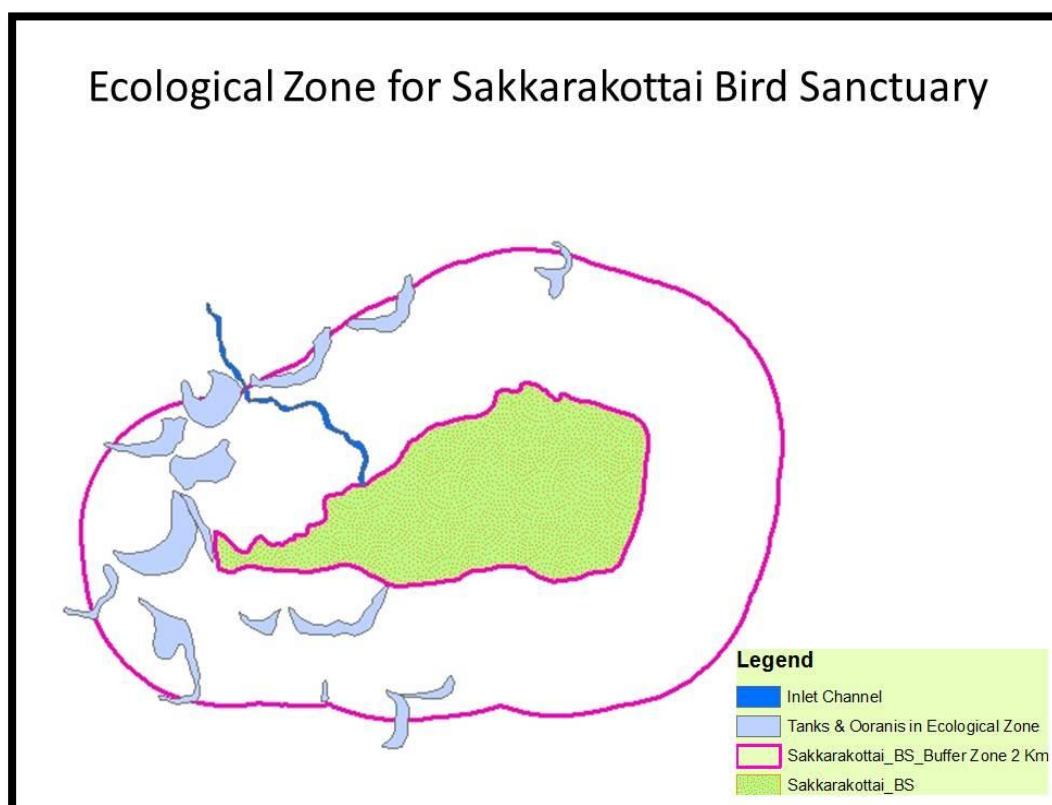
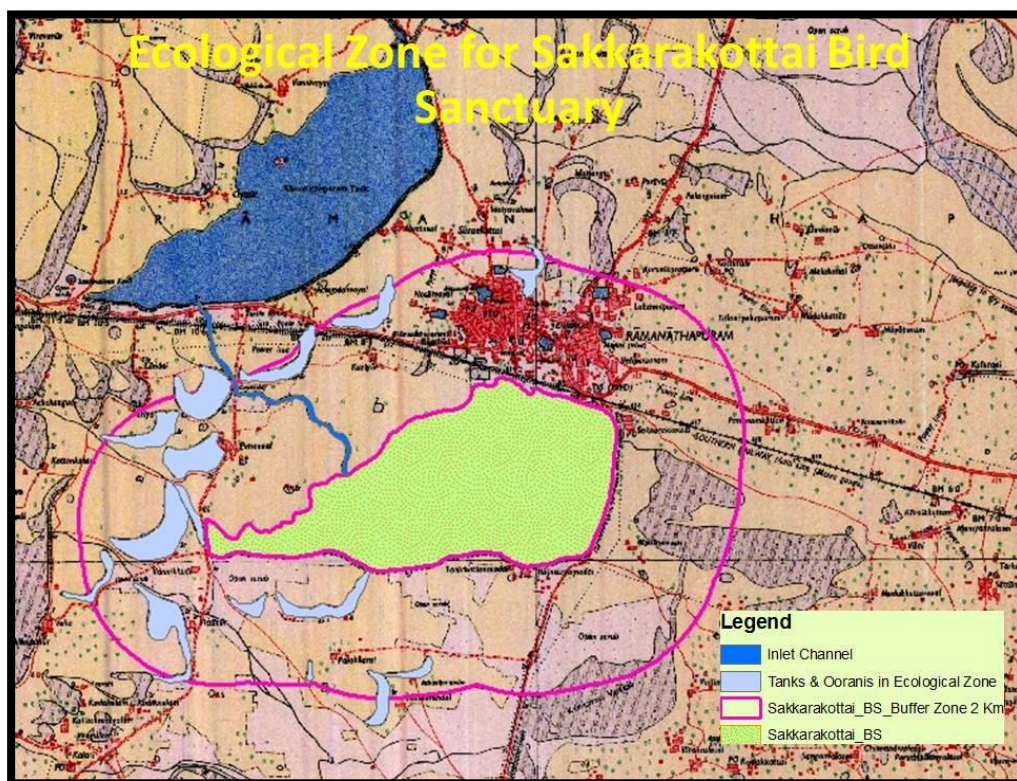
2.1.2. Ecological boundaries

Man-made boundaries are of least concern for the birds as they fly across nations and oceans to reach the sanctuary that has been declared so to conserve the natural breeding and feeding place for winter migratory birds from far and wide. These traditional nesting grounds, even though is the home for a considerable number of these much delightful feathered visitors, not all of them are restricted to the sanctuary or its immediate surroundings for food and nesting materials. One reason for being so is the yearly diminishing water-level and the limited availability of food and nesting material to cater to a large number of birds. The resultant search of food and materials leads to the natural stretch of the legal boundaries of the sanctuary, forcing to define an ecological boundary. Adjoining village tanks and ponds, locally known as ‘Kanmois’ and ‘Ooranis’, provide an ecologically continuous ecosystem for the healthy survival of the birds. A study carried out around the sanctuary within a radius of two kms from the sanctuary as part of the management plan preparation for potential feeding grounds and areas that offer nesting materials provided the following list of village tanks and ponds [Annexure II (a) & (b)], which could be considered as an ecological continuation of the Sakkarakottai Birds Sanctuary (*Map 3*).

There are 11 Kanmois and 8 Ooranis found in the ecological boundary of which Sakkarakottai kanmoi and Periyakanmoi are the only perennial kanmoi found in the region and others were recently improved by the PWD and other government departments for water storage purposes. The kanmoi is abundantly vegetated with *Prosopis juliflora* (Tamil name: Velikaruvai), *Ipomoea carnea* (Tamil name: Neyveli Kattuamanaku), *Cyperus pangorei* (Tamil name: Korai pul), *Cynodon dactylon* (Tamil name: Arugam pul). However, around the sanctuary, bunds region is fully vegetated with some of the particular plants species viz., *Datura metel* (Tamil name: Oomathai), *Abutilon indicum* (Tamil name: Thuthi sedi), *Calotropis procera* (Tamil name: Erukkam poo). Moreover, Babul (*Acacia nilotica*) tree cover is very less in this sanctuary. Hence, this management plan recommends the babul plantation to be raised inside of the sanctuary areas. It will be helpful for birds breeding and feeding ground.

It is to be noted that, The Ecological boundary will not have any legal sanctity. It is only a management entity and classification to take up management interventions. There would be no restriction or regulation what so ever over the existing rights, activities and ongoing practices. The 2 Km boundary around the sanctuary is an imaginary boundary, which also nearly encircles the proposed eco-sensitive zone.

MAP No. - 3. ECOLOGICAL BOUNDARY AROUND THE BIRD SANCTUARY



2.2. Geology, rock and soil

The sanctuary falls in an area geologically considered as pediment of recent origin. Though fluvial processes have resulted in the present morphological features of the area, human interference has greatly altered the natural conditions of erosion. Gneisses underlying the alluvium largely deposited by the Vaigai River are very deep seated. Calcium carbonate underlines the soil strata, leading to bore wells yielding brackish water.

The area has black soil with excellent water retentivity. As one digs deep, the soil retains its colour but tends to be clayey in nature. They are generally alkaline soils. The district soil Atlas classifies the soil of the region as Typic Ustipsamments and VerticHaplustalfs + Ustropepts capable of supporting Palmyra, Coconut and pulses respectively. The soil productivity map in the atlas classifies Typic Ustipsamments to be of extremely poor productivity whereas that of VerticHaplustalfs + Ustropepts to be of good productivity.

2.3. Terrain

Sakkarakottai Birds Sanctuary is situated in a plain country of elevation of 30m to 100m. The sanctuary is a flat piece of seasonally water holding community tank. It is in general 1m to 3m deep from the tank embankments. Between the embankments and the vegetated area there is approximately a 100m wide water holding region, deepened and maintained by Forest Department and Tamil Nadu PWD. Agricultural lands surround the sanctuary and mark the Southern boundary of the sanctuary. There is no striking altitudinal difference as far as the horizons towards all directions from the sanctuary. The only obstacle for ones clear vision is the small community forests grown over the earthen embankments of adjoining village tanks and Palmyra trees surrounded by open *Prosopis* growth. From a visual observation, it is very evident that, the tank is built according to the contour alignment. An aerial view of the sanctuary gives a crescent or fish tail shape. The kanmoi starts at a western point where a channel from the Periyakanmai flows into the kanmoi through an aqua duct (**Map 3**). Total length of the embankment is 6 kms. There are 14 sluices that drain water to the agriculture lands.

2.4. Climate

Due to the unique and unfortunate relative position of this country side in the dry south east sheltered by the cardamom hills from the south west monsoon, of the main track of the advancing Bay of Bengal branch and to a larger extent losing the full effect of any cyclones of the retreating monsoon by reason of its position in relation to the Cauvery delta

bulge and Ceylon, this area receives very low rainfall. The area can be classified as a semi arid desert for all practical purposes.

Three distinct seasons are experienced in the sanctuary area. The winter starts from November and lasts till middle of February. After that, summer season starts and it continues up to the middle of June. This is followed by scanty rains up to September and thereafter it is followed by monsoon rain up to first fortnight of the December.

2.4.1 Rainfall pattern and distribution

The area receives an average rainfall, varying between 503 mm to 1000 mm annually. Most of the water collected in the tank is from the North East monsoon. The period from mid February to whole of August receives practically minimum rain fall, though occasional showers might result due to local climatic manifestations. A period of 12 years starting from 2001 to 2012 [*Annexure III - Graph 1*] shows two peaks of rainfall availability in the region, in the month of May and October. Moreover, summer season receives minimum rainfall in the sanctuary.

2.4.2. Temperature; a summary of year round pattern

The data is available for Ramanathapuram which is the nearest town, taluk and district headquarters to the sanctuary. Although it is evident from field experience that the sanctuary experiences temperatures higher than the district capital, non availability of data made the management plan team to utilize the data from the district capital for all practical purposes of climatic estimations. Mean Monthly temperature (*Graph 2*) and humidity data of the district capital are provided in [*Annexure IV (a & b)*]. July registers the highest maximum temperature of 35.5°C whereas May registers the highest minimum temperature of 28.3°C.

2.4.3. Humidity; a summary of year round pattern

Relative humidity remains 89% and 56% for all the months except January for which the numbers are 86.1% and 54.2%.

2.4.4. Wind Speed: a summary of year round pattern

Average wind speed of the sanctuary areas is recorded between 3.40 to 30.00 km/h.

2.4.5. Drought and its periodicity

Rainfall, ground water availability, reservoir levels and crop condition determine the nature and extent of drought in the state. Tamilnadu has eight drought-prone districts covering 8, 33, 997 km or about 64 percent of the total area of the state. The southern zone of the Tamilnadu is under the rain shadow region and having prolonged dry climate. Drought

occurs frequently in Tamilnadu in the districts viz., Ramanathapuram, Sivagangai, Thiruvallur and Coimbatore. Red, black and alluvial soil types are predominant in Tamilnadu districts, but sandy soils in the south-eastern part of the state are prone to chronic droughts. About 30 percent of annual rainfall is recorded in the south-west monsoon and 50 percent is contributed by the north-east monsoon through cyclonic activity. Sakkarakottaibirds sanctuary areas have droughts in summer season in every year. Drought in Ramanathapuram district is common due to the inadequate rain fall. Drought also creates the problem of unemployment of villagers residing around the sanctuary.

2.5. Water sources

The sanctuary is mostly rainfed. It is housed in a traditional irrigation tank fed by a distributary channel of Vaigai. Water flow is restricted to the few months of rainfall and if and only if considerable water flows through Vaigai, the Sanctuary receives any water. Water, if collected to its full capacity is sufficient enough for the following 7 months. The water source is mainly used for agricultural purposes and it attracts water birds as well. The sanctuary has no ponds Cattle so far; hence present management plan recommends the formation of new ponds inside the tank wherever required. These ponds if dug would provide slight longevity to the water holding of the tank. The ponds provide extended water availability for a month more after the north east monsoon months.

2.6 Range of Wildlife, Status, Distribution and Habitat

The sanctuary is a near homogenous tank with largely herbs as vegetation. The Southern and South Western part of the wetland retains a considerable amount of water even during summer. Wetland with submerged trees has evolved into a natural habitat for a wide array of plants and provides shelter for birds and other animals.

2.6.1 Vegetation

The sanctuary vegetation is mostly thorny scrub jungle. It is dominated by *Prosopis juliflora*, *Ipomoea carnea* and grasses along with small numbers of Babul (*Acacia nilotica*). The tank bund and the area outside of the tank have few trees. The medicinal plants such as *Ocimum sanctum*, *Phyllanthus amarus*, *Calotropis procera*, *Datura metel* grow in the area. Check list of flora is provided in **Annexure V**.

2.6.2 Animals

The sanctuary offers ideal habitat for winter migratory birds with considerable diversity in nesting and feeding behavior for breeding and feeding. The feathered visitors flock the sanctuary from October to February. The wetland is irregular in depth and retains water for 3 to 5 months if rain is normal. Names of a few fishes called by local names are Jilebikendai, Kendai, Keluthi and Ayirai etc. Separate lists of amphibians, mammals, reptiles and carnivores are not available as efforts to such end have never been initiated in this sanctuary. More than 5 near threatened species such as Pelican, Painted stork, Eurasian Spoon bill, White ibis, Darter and 9 water birds such as common teal, Pin tail, Garganey, Green Shank, Common sand piper, Green sand piper, Little ring plover, Little stint, Red shank and 68 common birds are already documented.

Apart from avifauna the sanctuary supports variety of snakes which includes both poisonous and non-poisonous nature. The Commonly seen are Common vine snakes, rat snakes, cobras and Keelbacks.

Other animals commonly seen around the sanctuary are Jackals, Mongoose and Hares etc.

Category wise check list of fauna including Avi-fauna are provided in **Annexure VI** and the list of mammals, Amphibians and Reptiles is given in **Annexure VII**.

CHAPTER-III

3. HISTORY OF MANAGEMENT AND PRESENT PRACTICES

3.1. General

Sakkarakottai Bird Sanctuary that forms a part of the Sakkarakottai Kanmoi is named after the Sakkarakottai village. The exact year or period of construction of the Kanmoi is not available. The importance of the tank as a bird habitat was identified in the year 2010, since then protection used to be provided to the birds that nest in the tank. It is evident that birds' took advantage of the village tank that was constructed for the purpose of irrigating agricultural fields. The villagers are supportive to protect the birds as the water enriched (Guano) with the droppings of these birds was of considerable fertility value to the adjoining agricultural fields. Villagers of Sakkarakottai are traditionally protective about the birds. Understanding the importance of the area, Tamil Nadu Forest Department declared it as a birds sanctuary in the year 2012. The sanctuary is managed scientifically under the consistent and clear interests of Tamil Nadu Forest Department. The sanctuary is under the administrative and protection charges of the Wildlife Warden, Gulf of Mannar Marine National Park, Ramanathapuram. Currently the sanctuary is under the field control of Range Forest Officer, Ramanathapuram Range.

3.2 Timber operations including bamboo and firewood harvest

The vegetation type in the Sanctuary area comes under Dry Deciduous Scrub Forest type with few species typical of tropical dry deciduous xerophytes. The area has no history of timber, firewood or bamboo harvesting over it.

3.2.1 Silvicultural Systems and Tending Operations

No silvicultural or tending operation was practiced in this area except protection from felling.

3.2.2 Evenaged Systems and Unevenaged Systems

The bird sanctuary is conserved in-situ No other forestry activity is done except restoration of vegetation. The vegetation is open canopied thorn scrub forest with unevenaged system.

3.2.3 Bamboo Working

Bamboo species not found in this Bird Sanctuary, So no bamboo working practiced in this Bird Sanctuary area.

3.2.4 Firewood Harvest and Collection

Villagers from Sakkarakottai, Paalkarai, R.S.Madai and Achadipirambu carry out illegal collections of firewood. However, no prescription for firewood collection exists.

3.3 Non wood forest produces (NPW) collection

There is lot of demand for fuel wood for cooking and other uses in the year of droughts when there is little or no agricultural waste to burn and fuel wood demand spurts up. No minor forest produces collection is permitted from the sanctuary area.

3.4 Leases

No leases have been granted in the Sanctuary area as it does not contain any important mineral.

3.5 Other Programmes and activities

Except Central and State Sponsored Scheme, no other programmes and activities have been carried out in this Sanctuary.

3.6 Forest Protection

3.6.1. Legal status

The Sakkarakottai kanmai area was declared as a bird sanctuary in the year 2012, with an estimated area of 230.49.5 ha (S.No.68; 383,209; 25) in Sakkarakottai, Rajasuriyamadai and Achadipirambu villages. It is notified as a sanctuary within the meaning and scope of Section 18 (1) of Wildlife Protection Act 1972, through the G.O. Ms. No.114, E&F (FR.5) dated 17.04.2012.

3.6.2. Hunting

At present, no hunting activities reported. The illegal activities are being monitored vigilantly both within the sanctuary and also in the ecological boundary of the bird sanctuary. There are exclusively four watchers who are involved in full time protection of the Sanctuary.

3.6.3 Poaching and Other Illegal Activities

3.6.3.1 Poaching

No poaching activities are noticed. But adequate caution has been taken to prevent illegal fishing.

3.6.3.2 Illegal Cutting of Trees

The sanctuary is devoid of highly valuable timber species or secondary timber species except for very few babul trees. Therefore, there is no issue with regard to felling of trees.

3.6.3.3. Illegal removal of NWP encroachment and other illegal activities

The villagers collect Babul pods for their cattle.

3.6.4. Livestock grazing

The sanctuary does not possess any great resources for supporting grazing except for babul, *Prosopis*, grasses and other herbs. However, the resource surrounding the sanctuary itself is devoid of any vegetation suitable for grazing, the sanctuary is under the pressure of being utilized for grazing. There is constant pressure of livestock grazing from cattle and goats. After arriving at a consensus with the local community, measures to control and permanently check grazing are recommended.

Table 1: Villages and the livestock presence

Village name	Cattle	Goat/Sheep	Poultry	Total livestock around the BS
Sakkarakottai	45	60	80	185
Paalkarai	60	520	55	635
R.S.Madai	55	580	150	785
Achadipirambu	15	160	30	205
Total	175	1320	315	1810

3.6.5. Wild and Man-Made Fires

So far, wild fire is reported in the sanctuary area.

3.6.6. Insect attacks and Pathological problems

Acacia leucophilea plant affected by *Anomalococcus indicus* insect and *Acacia planiferons* plant affected by *O.tarandus* insect recorded. Pathological attacks recorded in Bird sanctuary caused by Rust fungi (*Ravenlia acacia* & *Ravenilia evansii*)

3.6.7. Wildlife Health

There has been no incidence of occurrence of bird flu in the past in and around the sanctuary.

3.6.8. Inter agency programmes and problems

As such there is problem of unemployment in the areas particularly for the youth. There are no major developmental programmes running except Government initiatives through Panchayats and agriculture labour work being made available by private farmers.

3.7. Tourism

The tourists can visit the sanctuary without paying any fee and the sanctuary is open throughout the year. Tourism is high in the month of Dec-Jan and low in the month of May-Sep. The best time to visit the Sanctuary is December-January.

(a). Existing Facilities

The sanctuary has no facilities to promote eco-tourism. The infrastructure is very poor and at the best of times there is twice daily bus trip from Ramanathapuram to Palkarai village. It is not a part of eco-tourism programme. The Sanctuary does not have basic amenities for the visitors.

(b). Focus: Policies

The focus on eco-tourism in Sakkarakottai Bird Sanctuary is largely to make it a regional learning center and a place for educating students, rural youth and villagers. It is endeavor to make it a regional attraction towards avian fauna conservation. A team of youth may be trained as eco-tourism guides to enable guided avian tourism to be in place and also to provide additional income to the locals. The major focus towards eco-tourism in Sakkarakottai would be to attract the school and college students to create awareness about avian fauna conservation and its importance. Since the sanctuary does not fall in any of the tourism network, it would be difficult to attract the visitors from far flung places.

3.8. Research Monitoring and Training:

3.8.1. Research

The forest department sometimes engages with the academic institutions like colleges for carrying out research studies. The sanctuary offers wide opportunities for ornithologists in studying various aspects of birds' life. Efforts may be made to promote local research organizations, colleges and universities interested in undertaking habitat, floral or faunal studies in the sanctuary. Possible assistance by all means may be extended to such organizations.

Regular monitoring on the arrival and diversity of birds is being done on daily basis by the in-house Bird watchers engaged in the Sanctuary. Pollution, water quality etc., is not carried out in the sanctuary. In any good season when the tank is inundated due to good rains, the water would be retained for not more than six months and rest of the year the sanctuary is dry.

Table 2: List of Research Publications

S.No	Research Publication
1	Subramanya S (2005), Heronries of Tamil Nadu, Indian Birds Vol.1 No.6

3.8.2. Training

Training to staff is being given every year regarding bird identification and population estimation. Besides training is given to field staff on importance of wetlands and its ecosystem.

3.9 Wildlife conservation strategies and their evaluation

This working plan recommended the area to be managed exclusively for the conservation and development of wildlife. After the constitution of the sanctuary the focus of management has been protection by establishing anti-poaching camps, and habitat improvement interventions such as soil and moisture conservation measures, de-silting of tanks, Tree planting with taller seedlings and Fruit bearing seedlings etc.

3.10. Administrative setup

The administrative control of Sakkarakottai Bird Sanctuary is with the Wildlife Warden, Gulf of Mannar Marine National Park. Under the Wildlife warden's control, Forest Range Officer, Ramanathapuram exercises the field control. A forester and a forest guard have the immediate protection responsibility of the sanctuary. Four daily wages Bird watchers are also posted for field assistance and protection. At present there is no separate management team exclusively responsible for the sanctuary.

3.11. Communication

The present forest watcher employed may be equipped with a smart phone, which can be served as a dedicated and secure communication means between the headquarters and the sanctuary. Such a smart phones can also be useful for field patrolling as well as recording the incidents with GPS points. Walkie-talkie is important for communication for frontline staffs and Range office during disaster. So, providing a walkie-talkie is necessary for every range office and those who are patrolling in and around the bird sanctuary.

Field details with GPS points are being updated in special created WhatsApp group during their patrolling. It is helpful to know the field status frequently.

3.12 Summary of Threats to Wildlife

- Potential threat of poaching
- Grazing
- Conflict among communities in adjacent villages claiming for rights in the tank/sanctuary
- Invasion by invasive alien species
- Increased interference in sanctuary management
- Poor knowledge of wild animal biology among sanctuary staff
- Consistent drought conditions
- Lack of clear boundary demarcation
- Lack of resident forest department staff
- Lack of communication network
- Chronic shortage of funds

CHAPTER-IV

4. THE PROTECTED AREA AND INTERFACE LAND USE SITUATION

4.1 The Existing situation in the Zone of influence

The people living around the sanctuary do not use this area directly. People around the protected area are more cooperative since they are not dependent on the Protected area. Because of the year-round irrigation facilities, farming is the major occupation. Farmers benefit from these birds since they feed on insects in these fields and control the pest population. But usage of chemical fertilizers and pesticides by farmers to protect the agricultural crop may influence the population of insects and other amphibians and fishes. These are the feeding grounds of some migratory birds. The after-effects are not yet studied. But these activities have no influence on the population of migratory birds as per the census. Even then, farmers may be educated and encouraged in using bio-fertilizers and other less harmful pesticides.

4.1.1 Villages inside outside protected area, ethnic, identities, traditions, customs, relationship between distinct groups of people, relationship with resources, habitat and area.

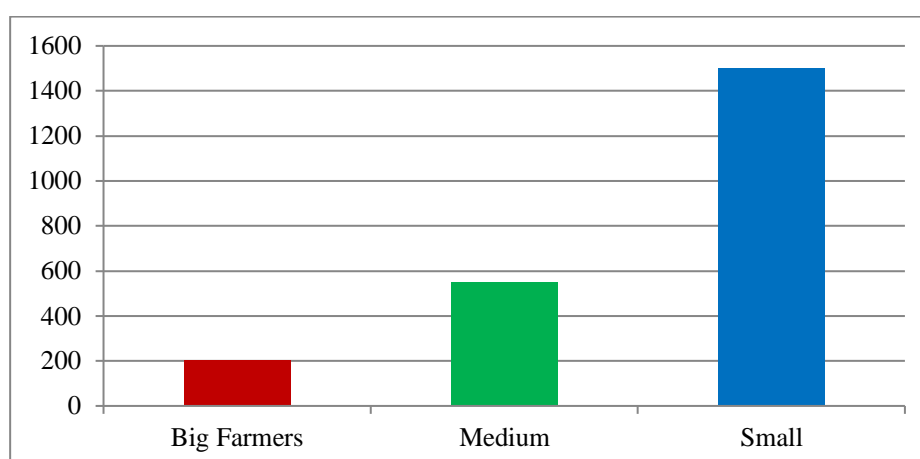
There are three Revenue villages adjacent to the sanctuary viz., Sakkarakottai, Rajsuriyamadaï and Achadiparambu. In these villages, the total human population is 9303 and corresponding cattle population including cows, Bull, goats and sheep comes to 1810 (Table. 1). Most of the people depend upon Rain fed agriculture while the rest earn their livelihood as daily wage laborers. The villagers belong to Thevar, Pallan, Agamudiyar, Yathaver, Asari, Paraiyar, Vannan, Muslim and Chettiyar communities. The ethnic identity thus being varied, tradition and customs also vary accordingly. There is no major rift between communities and they mostly live in harmony with existing socio-political scenario

Traditionally, Sakkarakottai villagers have protected birds as they have realized the importance of bird droppings in agriculture and their economy. Sentiments associated with bird protection have been observed across all class and caste barriers in the village. Within the immediate periphery of the sanctuary, there is an old temple used for worshipping by the villagers.

4.1.2 The state of the people's economy, vocations, land use, use of forest and non-forest based natural resources by people and seasonal patterns.

Agriculture is the primary land-use type around the bird sanctuary. The total area under agriculture is 3728.50 Ha. While this whole area is under rain-fed irrigation during the monsoons, nearly 724.85 Ha. of land is cultivated using tank irrigation during the non-monsoon period. Use of groundwater for irrigation is not viable due to brackish conditions. The patterns are supportive of the overall historical profile of the landscape.

The major crop cultivated is rainfed- paddy (short duration) during the period of October to December. Minor crop such as chilly and pulses are cultivated when there is not enough water to irrigate paddy. Weeding is done twice or thrice from seedling till harvest stage and no chemicals are used for weeding. In Sakkarakottai number of families holding large farms is very low around 200 Nos, whereas there are around 1500 small scale farmers owning 1 or 2 acres and 550 medium scale farmers.



There are no fishing families in the village, however, few households engage in opportunistic fishing. Catla, Tilapia, Uluvai, Tin fish (Ira) and Catfish are the commonly harvested species. No specialized fishing gear is used for fishing.

4.1.3. Implications of the land use and resource dependency for the conservation of Protected Area

The study of Land Use and Land Cover Change (popularly referred to as the LUCC process), is known to have a significant bearing on the management of protected entities such as Bird Sanctuaries. This is especially relevant for identifying the proximate and distal anthropogenic pressures on the habitat and its resources, notably water. It is also a critical issue in involving local communities in conservation efforts for instance a program

planned to improve local livelihoods may lose relevance rather suddenly when the household decides to sell their land to a commercial enterprise.

There have been no systematic studies on the land use land cover change around Sakkarakottai BS over a given time frame. However, by way of secondary information and field realities, it is interesting to reveal that, no discernable change in land use or land cover has occurred around the Sanctuary, except for development along the Northern and Eastern periphery. Extent of land under permanent fallow remains static. The northern and eastern boundaries have witnessed dramatic change in land use wherein, lands are converted into real estates.

4.2 The Development Programs and Conservation Issues

Mostly the works are implemented through Panchayat funds and by PWD. The interplay of market forces has their impact on the subsistence economy of the local people. Taking the poor condition of the people living inside the sanctuary area certain external market forces have come in to prominence. For cultivation of Brinjal, tomato, the cultivators have been encouraged by outside market forces providing loan facilities to purchase hybrid seeds, insecticide and Chemical fertilizers. There has been a good development in dairy sector around the sanctuary area by way of loan for hybrid breeds of cows, opening of milk points for purchase of milk from the farmers. Also, the people are encouraged to rear more cattle.

4.2.1 An evaluation of government and non-government agencies programs for development. Implications for PA, people and ZI

Since specialized field staff may not be adequate, help of other institutions like BNHS, SACON, NGOs and Universities will be sought. A gap analysis has to be performed to find out the areas in which the basic data is lacking. As a subsequent step, a research priority matrix has to be prepared. Management should provide the necessary financial and logistic help to the institutions or individuals who are interested in carrying out research works in the fields that are a priority for the sanctuary.

PART - II

CHAPTER-V PROPOSED MANAGEMENT

5. The Vision, Objectives and problems

5.1. Vision

‘Develop and maintain Sakkarakottai Bird Sanctuary as a well-managed wetland ecosystem harboring avifaunal diversity within the wetland complexes of Tamil Nadu and acts as an important centre for conservation education and ecotourism with the active involvement of local communities and other stakeholders.’

5.2. Objectives of Management

The objectives drafted with a long-term perspective of creating a healthy and conducive environment for the visiting birds are as follows,

- To improve and ensure ideal wetland habitat for the avian fauna
- To ensure prolonged and requisite quantum of water availability in the tank to the extent possible
- To ensure better management inputs to the satellite wetlands around Sakkarakottai tank making an ideal continuum of habitat
- To evolve a systematic practice of scientific monitoring of population
- To create awareness and education towards conservation of avian fauna
- To ensure minimal disturbance and greater protection to the birds.
- To ensure better protection to the sanctuary by way of proper boundary consolidation and settlement of rights
- To promote Sakkarakottai Bird Sanctuary as a centre for conservation education, research and ecotourism
- To manage Sakkarakottai Bird Sanctuary with active participation of local villagers and ensure alternate livelihood benefits through management.

5.3. Problems in Achieving the Objectives

The problems in achieving the above-mentioned objectives are listed below;

- a) The most important problem faced by this sanctuary is the prevailing drought conditions owing to reduced rainfall in the region as well as in the catchments of Vaigai reservoir from where water has to flow in to the sanctuary.
- b) Multiple control of the tank that houses the sanctuary by various departments poses critical challenges to effective management.
- c) The inlet channel walls are weak and are prone to be wrecked during rainy season by agriculturists on the banks of the channel thereby not letting the entire water flow into the tank.
- d) Natural regeneration is hampered to a great extent by lack of water and soil moisture and grazing.
- e) Lack of accessible sources of water also reduces the viability of carrying out artificial regeneration activities.
- f) *Prosopis* grows extensively in and around the sanctuary and if not controlled would cover up the sanctuary.
- g) Siltation in the inlet channels and tank bed is another reason for reduced water holding.
- h) Lack of systematic monitoring and apprehension among the villagers about the sanctuary as a protected area veil any incidents of poaching.
- i) The Sanctuary area is not surveyed yet and therefore the demarcation has also not happened yet on the ground.
- j) Summer months worsens water scarcity forcing villagers to encroach into the sanctuary to defecate, thereby reducing the plausibility of the place for tourism. Possibilities of human induced pathogens being transmitted to the birds remain high, increasing risk of detrimental effects on the avian health.
- k) To encourage eco-tourism in the sanctuary, sufficient accommodation facilities are not available. Non-availability of guides and vehicles make conducting guided tourism impossible.

- l) Though several research programs have been carried out in the past, documentation and compilation of the results are lacking. Most projects by the research institutions do not have practical utility for the sanctuary management. Lack of coordination between the forest department and the research institutions thus leads to research programs that are impractical and the sanctuary is seen treated as just another study site for the researchers.
- m) Lack of basic training in wildlife management, remoteness of the place of posting and insufficiency of basic amenities and infrastructure, proper orientation and motivation are some of the factors responsible for low output of the staff.
- n) Due to chronic shortage of funds, sanctuary's protective infrastructure is poor. Creation of essential accommodation facilities suffers due to the same reason.

Chapter-VI

6. THE STRATEGIES

The Sakkarakottai Bird Sanctuary is a PWD tank falling within the well inter-connected and mutually dependent water systems in the Ramanathapuram district. Ramanathapuram being a water scarce region because of the scanty rainfall, managing the wetland in such a water stressed landscape is a big challenge. The Sakkarakottai Bird Sanctuary has been playing a vital role in attracting the winter migratory birds for meeting their requirements of nesting, feeding, breeding and roosting. Therefore, the broader strategies in managing the wetland would be

- i. Creating an environment to attract the migratory birds by way of ensuring the availability of water.
- ii. Retaining water for prolonged period of the migratory season.
- iii. Improving the habitats for birds so as to ensure conducive environment for their breeding.
- iv. To elicit community participation in conservation and management of the bird sanctuary.
- v. To create awareness among the stakeholder community of the region and educate regarding the importance of conservation of avian diversity.
- vi. To scientifically manage the sanctuary through scientific research and monitoring.

6.1 Boundaries

6.1.1. Legal Boundaries

The boundaries of Sakkarakottai Birds Sanctuary, though very clearly defined in the boundary description, have not been demarcated properly on the ground leading to confusion. The confusion yet to be rectified prevails regarding the Northern and western Boundary of the Sanctuary along the area adjoining the Patta lands.

6.1.2. Ecological Boundary

Man-made boundaries are of least concern for the birds as they fly across nations and oceans to reach the sanctuary that has been declared so to conserve the natural breeding and feeding place for winter migratory birds from far and wide. These traditional nesting grounds, even though is the home for a considerable number of these much delightful feathered

visitors, not all of them are restricted to the sanctuary or its immediate surroundings for food and nesting materials. One reason for this being so is the yearly diminishing water-level and the limited availability of food and nesting material to cater to a large number of birds. The resultant search for food and materials lead to the natural stretch of the legal boundaries of the sanctuary, necessitating defining an ecological boundary. Adjoining village tanks and ponds, locally known as ‘Kanmois’ and ‘Ooranis’, provide an ecologically continuous ecosystem for the healthy survival of the birds. A study carried out around the sanctuary within a radius of two kms from the sanctuary as part of the management plan preparation for potential feeding grounds and areas that offer nesting materials arrived at a list of village tanks and ponds [*Annexure II (a) & (b)*], which could be considered as an ecological continuation of the Sakkarakottai Birds Sanctuary (*Map 3*). There are eleven Kanmois and eight Ooranis found in the ecological boundary.

A radius of 2 km is identified as humdrum distance from the sanctuary for identifying and locating other kanmois and ooranis that would perhaps serve as source of food and nesting materials for the visiting birds. This may be considered as the immediate ecological boundary for all practical purposes. Refer *Annexure II a & b* and *Map 3*. The kanmois and ooranis within this region may be considered as one ecological continuum of Sakkarakottai Bird Sanctuary.

It is to be noted that, The Ecological boundary will not have any legal sanctity. It is only a managerial entity and classification to take up management interventions. There would be no restriction or regulation what so ever over the existing rights, activities and ongoing practices. The 2 Km boundary around the sanctuary is an imaginary boundary, which also nearly encircles the proposed eco-sensitive zone.

Measures may be devised to ensure protection and availability of food for birds that visit these kanmois and ooranis. Few suggestions are:

- a) Educative lectures and camps on the importance of visiting avian fauna for local population may be organized.
- b) Display boards indicating possible visiting birds and their importance of them may be installed at each of these kanmois and ooranis.
- c) Awareness materials such as stickers, posters, pamphlets, handouts, guide booklets may be supplied to these villages too.

- d) A core team of youngsters may be organized as bird protection force to ensure local protection.
- e) A team of youth may be trained as eco-tourism guides, to enable guided Avian tourism, which would also provide additional income to the locals.
- f) Incentives and awards may be declared to individuals committed to protection, providing crucial information on poaching and those who are doing commendable deeds in order to enhance bird habitat and bird diversity.
- g) Regular patrolling for enforcement organized by the department may cover these villages and surrounding kanmois too.

6.2. Zonation

For effective management of the sanctuary, the area has been divided into three major zones viz., core zone, buffer zone and tourism zone. The existing zones are revised based on logical ease of management.

Core Zone

The entire sanctuary except the embankment or the tank bund is the core zone. The deep water spread areas and the tank foreshore areas which form the feeding, roosting and nesting ground for the birds may be classified under the core zone. This zone would be the rigorous manipulation zone for the purpose of habitat improvement.

Buffer Zone

The tank bund or the embankment and area surrounding 2.0 km buffer area around the sanctuary boundary will be considered as buffer zone. It will include the village and parts of adjoining kanmois. This zone is categorized in such a manner that it is in synchronous and encircles the Eco-sensitive zone proposal submitted for approval for the Bird Sanctuary. Besides, the buffer zone except for area falling in the Bird Sanctuary notification does not have any legal sanctity and is classified for managerial intervention and planning. Therefore, all the existing right, claims, activities and practices would continue without any hindrance

Tourism Zone

This zone consists of the main water holding region (up to 100 m from the embankment), bunds, inlet channel, roads and the mud track that is used as short cut between the village and Ramanathapuram town. The zone is overlapping with the buffer zone. The

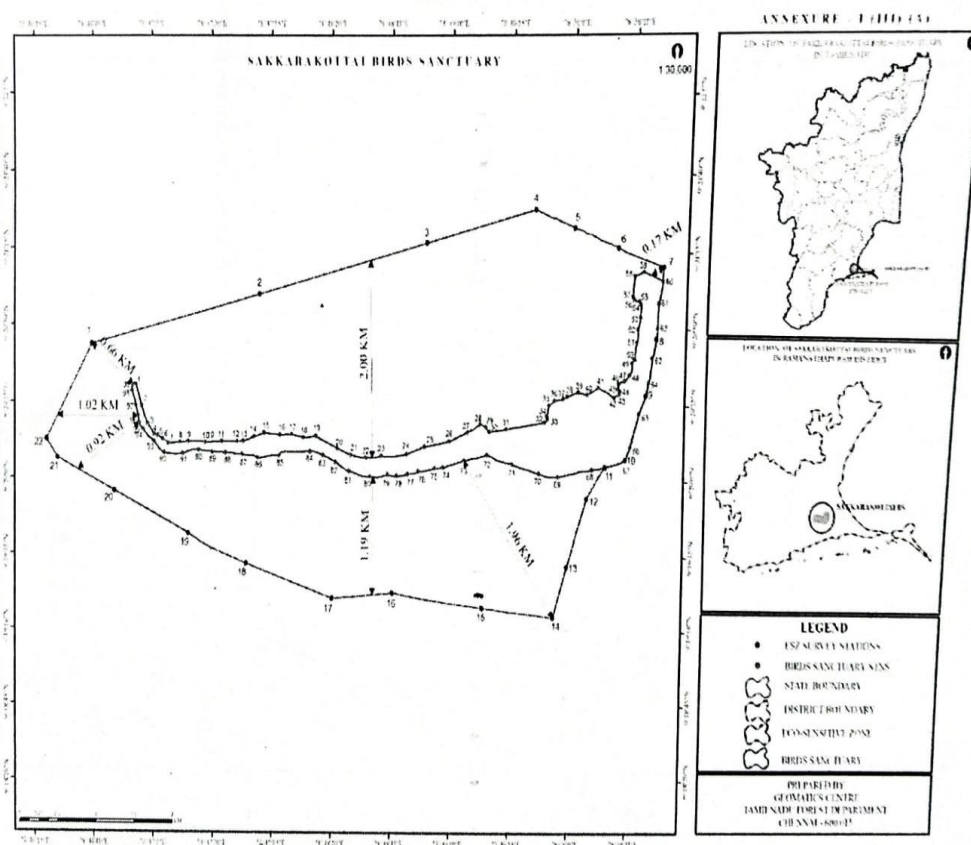
tourism zone is a managerial classification, which would have no implication on the existing right, claims, activities and practices in the buffer zone.

Eco Sensitive Zone:

Eco sensitive zone of the Sakkarakottai is notified on 05/07/2018, For more details check Annexure IX

MAP 4: Eco Sensitive Zone of Sakkarakottai Bird Sanctuary

MAP OF ECO-SENSITIVE ZONE OF SAKKARAKOTTAI BIRD SANCTUARY ALONG WITH LATITUDE AND LONGITUDE OF PROMINENT LOCATIONS



6.3. Zone Plans

6.3.1. Plan for Core Zone

The entire sanctuary except the embankment or the tank bund is the core zone. The deep water spread areas and the tank foreshore areas which form the feeding, roosting and nesting ground for the birds may be classified under the core zone. This zone would be the rigorous manipulation zone for the purpose of habitat improvement.

- i. Total protection against all forms of biotic interferences will be ensured.

- ii. Only scientific studies and research activities with proper sanction without destructive sampling techniques will be permitted.
- iii. The core zone will be free from forestry operations other than Habitat improvement works. Similarly, grazing, fuel wood collection and NWFP collection are prohibited.
- iv. Only regular habitat Improvement/protection works like maintenance and digging of water holes, soil and moisture conservation works, creation of mound and islets, total uprootal of *Prosopis* plants and planting of *Acacia* saplings, apart from monitoring activities, will be permitted.

6.3.2. Plan for Buffer Zone

The tank bund or the embankment and area surrounding 2.0 km buffer area around the sanctuary boundary will be considered as buffer zone. It will include the village and parts of adjoining kanmois. This zone is categorized in such a manner that it is in synchronous and encircles the Eco-sensitive zone proposal submitted for approval for the Bird Sanctuary. Besides, the buffer zone except for area falling in the Bird Sanctuary notification does not have any legal sanctity and is classified for managerial intervention and planning. Therefore, all the existing right, claims, activities and practices would continue without any hindrance

Activities prescribed in Buffer Zone

- i. Fuel wood requirements of local population will be met from this zone at present but efforts may be made to gradually wean them away from such dependency from the core zone.
- ii. Portions of this zone will be opened for tourism, like the areas on the bunds and embankments.
- iii. Inlet channel connecting the sanctuary will be given a suitable gradient either by desilting or by deepening at selected places.
- iv. Inlet channel will be monitored to prevent possible draining of water by agriculturists to the fields on either side of the channel.
- v. A plan and methodology to desilt the tank will be devised so as to increase open surface of water and to reduce too much variation in depth.
- vi. Grasses will be planted on slopes of bunds facing towards tank. Local varieties such as *Cynodon dactylon* and *Eremopogon foveolatus* are preferred.

- vii. Educative lectures and camps on the importance of visiting avian fauna will be organized for local population.
- viii. Display boards indicating possible visiting birds and their importance of them will be installed at each of these kanmois and ooranis.
- ix. Awareness materials such as stickers, posters, pamphlets, hand outs and guide booklets will be supplied to these villages too.
- x. A core team of youngsters will be organized as bird protection force to ensure local protection.
- xi. A team of youth will be trained as eco-tourism guides, to enable guided avian tourism, which would also provide additional income to the locals.
- xii. Incentives and awards will be given to individuals committed to protection, providing crucial information on poaching, and those who are doing commendable deeds in order to enhance bird habitat and bird diversity.
- xiii. Regular protection patrolling organized by the department will cover these villages and surrounding kanmois too.

6.3.3. Plan for Tourism Zone

This zone consists of the main water holding region (up to 100 m from the embankment), bunds, inlet channel, roads and the mud track that is used as short cut between the village and Ramanathapuram town. The zone is overlapping with the buffer zone. The tourism zone is a managerial classification, which would have no implication on the existing right, claims, activities and practices in the buffer zone.

Activities permitted

1. Restricted and Regulated Movement of tourists without jeopardizing the conservation concern of the sanctuary may be permitted.
2. Concrete / wooden benches may be provided to visitors to sit and watch the birds from various locations on the bund.
3. Bund management may be carried out after arriving at consensus with PWD officials.

4. Bunds, adjoining available open land and buffers of the main road may be planted with *Syzygiumcumini*, *Ficus species*, *Mangifera indica*, *Thespeiapopulnea*, *Azadirachta indica* and *Dendrolalamusstrictus etc.*
5. One to two new watch towers may be erected on the tank boundary of the sanctuary to facilitate Wild Life photographers.
6. Habit of using toilet for day-to-day ablutions may be promoted through awareness programmes jointly organized with Health Department. The non-hygienic habit of using sanctuary as defecation grounds may slowly be weaned away.

6.4. Theme Plans

The following strategies are proposed for meeting the objectives of management.

6.4.1 Habitat Improvement

Habitat improvement will be based on the following considerations.

1. Protecting area against biotic degradation.
2. Improving the habitat for birds and other fauna.
3. Conserving, protecting and increasing the bio diversity.
4. Planting of *Acacia nilotica* during November and December.
5. The trees presently being used by birds for nesting should be protected from flood water.
6. Tree planting with suitable species should be taken up to ensure the future availability of good nesting sites. The barren patches in the area because of alkaline soil need be planted with trees after suitably treating the soil. Exotic weeds found in this area need to be replaced with fruit species and species suitable for roosting.
7. Measures for controlling predators like stray dogs, to be taken up by catching and translocating them too elsewhere.
8. Creation of new baby ponds to make sure that availability of water.
9. Deepening and desilting of wetlands will improve the quality of habitat.

6.4.2 Strategies to overcome protection problems

6.4.2.1 Control of illegal fishing

Fishing is totally banned within the sanctuary area.

6.4.2.2 Control of illegal grazing

Since the sanctuary is surrounded by villages and irrigated fields, in summer when there is very low inflow of water, cattle are driven inside the sanctuary for illegal grazing. To control this, protected by APW at respective places.

6.4.2.3 Fire Protection

Since the area is marshy throughout the year, there are no incidents of fire in the sanctuary.

6.4.2.4 Creating awareness for Public

To spread the message of conservation of wildlife, publicity material like brochures, handbills should be prepared and distributed freely among the tourists, general public, school children and the people surrounding villages to create awareness regarding the importance of conserving wildlife.

CHAPTER-VII**7. ECO-TOURISM, INTERPRETATION AND CONSERVATION EDUCATION****7.1. General**

Eco-tourism is defined as purposeful travel to natural areas to understand the cultural and natural history of environment, taking care not to alter the integrity of the eco-system, while producing economic opportunities that make conservation of natural resources beneficial to the local people. In a nutshell a tourism program, which is nature based, ecologically sustainable, where education and interpretation are the major components and where local people are benefited, can be called eco-tourism. Sakkarakottai Bird Sanctuary with its wealth of bird life is one of the most captivating places in Tamil Nadu. Hence, this sanctuary possesses good eco-tourism opportunity. With properly oriented and supportive staff and necessary funds this place can be transformed into a viable eco-tourism spot.

7.2. Objectives

- To ensure the participation of local communities in eco-tourism as guides and interpreters.
- To facilitate low impact ecotourism to benefit the local livelihood
- To develop Sakkarakottai as attractive ecotourism site.
- To provide conservation education about avian fauna to visitors.

7.3. Issues/Problems

Following are the constraints identified in achieving the objectives.

- The present staff strength is not sufficient to manage tourism. Even the available staffs lack orientation and proper training.
- There is shortage of qualified and trained eco-guides who can cater to the needs of foreign tourist in particular.
- Limited accommodation facilities, lack of decent eateries and uncertain Transport facilities are the major deterrents for the visitors.
- Despite the available potential, there is no attractive package of engagements offered to the visitors.
- Lack of frequent public transport system is another impediment to be addressed.

7.4. The Strategies

Following are the strategies available with the sanctuary to encourage tourism

- The rural enticement and serenity of the sanctuary.
- Excellent chances of sighting vibrant bird life in the sanctuary during Bird visiting season.
- Excellent water spread in the monsoon offers plenty of scope for boating for close watch of Birds.
- Availability of many educated youth, who can be groomed as eco-guides.

7.4.1. Identification of a Zone

Though tourism zone is identified and delineated in the previous chapter, the areas falling under the zone are listed below for reference.

- The main road and the mud track that leads from the village to Ramanathapuram town.
- Earthen bund and the main water holding region (up to 100 -150 m).
- The village and the buffer zone

7.4.2. Infrastructure Development

The sanctuary lacks basic infrastructure for the visitors who come to the sanctuary. Though the visitation is poor to the sanctuary, but in years to come with anticipation of good monsoon and in turn the arrival of birds the visitation is expected to increase. Following are some of the infrastructure facilities which need to be created for the sanctuary,

1. A walk way path along the Bund of the tank. Since the area is made of black soil, it is inconvenient to walk along the bund. Hence it would be worthwhile to make a foot path over the bund. 3-4 Km stretch of walk way path may be provided of stone pavement with revetment walls along the bund so that there is no slip of the bund.
2. Along the pathway or walk way shelter sheds with seating arrangements may be made for visitors to take shelter and rest. This could be designed at intermittent distance of every 500 meters.

3. The sanctuary has no watch tower at present. Two new watch towers in the southern and eastern most portion of the tank may be erected as to facilitate sighting.
4. The visitors need to be provided with basic amenities like restrooms, drinking water facilities etc.,
5. A parking area needs to be allocated at the entrance to the village so that in future, congestion of vehicles during season may be avoided.
6. An interpretation centre either at the Sanctuary itself or at Ramanathapuram could jointly cater to Sakkarakottai and Thertangal Bird Sanctuaries.

7.4.3 Regulations, Monitoring and Evaluation

The main objective of eco-tourism is that the benefits will flow to the local communities. Since, the management plan prescribes for strengthening of the Eco-development Committee and formal functioning of the Eco-Development Committees, the responsibility of conducting eco-tourism may also be entrusted with these committees.

CHAPTER-VIII

8.ECO DEVELOPMENT

The Sakkarakottai village largely surrounds the sanctuary. The irrigation tanks supply water to ryots of Palkarai, Achadipirambu, R.S Madai and Sakkarakottai villages. The villagers have their patta lands and other related activities near to the sanctuary apart from sending their cattle to the sanctuary for grazing. These villagers have exercised their rights over the tank for the collection of water, fuel, small timber, medicinal plants, soil, green manure, cutting of *Prosopis* for fuel etc from time immemorial for their own use. After declaration of the birds sanctuary, the villagers have to necessarily sacrifice the customary usage of resources from the sanctuary area, especially for the conservation of birds. Hence it became the primary responsibility of the managers to compensate their loss apart from making them as friends of nature, so that the objective of conservation is achieved. Eco-development is not only for improving the habitat conditions of the sanctuary but also for meeting the local people's needs to some extent.

8.1. Objectives

1. To mitigate biotic pressure and to reduce the resource dependency of local communities on the sanctuary.
2. To improve the Bird Sanctuary by soliciting co-operation of the local communities in order to enhance conservation efforts in the Sanctuary.
3. To generate alternate livelihood option for the local communities.
4. To build effective local institutions for proper implementation of eco-developmental activities through participatory approach.

8.2. Specific Issues

1. Illegal cattle grazing in sanctuary.
2. Scarcity of water in the villages.
3. Lack of alternative livelihood options.
4. Low agricultural productivity.
5. Lack of effective community institutions.
6. Inadequately trained and overburdened staff.
7. Inadequate funds.

8.3. Broad Strategies

1. Raising farm forestry on grazing land, revenue and private land to get fuel and fodder.
2. Enhance irrigation potential for productive agriculture.
3. Supply of agricultural inputs on subsidy.
4. Promotion of eco –tourism.
5. Promotion of traditional knowledge on handicrafts, herbal medicine and pharmacy.
6. Supplying raw materials for traditional handicraft and artisans.
7. Improve marketing linkage.
8. Creation of employment opportunities.
9. Awareness education.
10. Capacity building of all the stakeholders
11. Health camps for people and their domestic animals.
12. Building of effective local institutions.

8.4. Village Level site specific strategies:

The Eco development here aims at conserving Biodiversity by addressing both the impact of local people on the PA and the impact of PA on local fisher populations. It demands collaboration between Forest department, local communities, Scientific Institutions and Non-governmental Organizations. To achieve Socio-economic development in the villages, it is essential to improve the current practices and also develop ecologically sustainable & economically viable package of alternatives that are acceptable to people, self-sustaining, compatible with the sustainable use of resources and are very helpful in minimizing the pressure on the bird sanctuary. For successful eco development, willing participation of the local public and mutual trust between Managers and people are the vital elements in the process.

Sakkarakottai Bird Sanctuary Management Plan is finalized by consultation with local villagers carried out by forest staffs. Report of Public consultation of Sakkarakottai Bird Sanctuary is given in **Annexure VIII**.

The guidelines prepared by the Ministry of Environment and Forests describes Eco development as a package of Program that will demonstrate the concern of the forest

department for the socio-economic development of the fringe PA dependent population leading to promotion of cooperation of the villagers in the conservation and the Management of wildlife EDC is the most important local Institution to achieve this objective.

1. The EDC will be formed for village consisting of about 150-200 households. The Ranger will convene a general meeting of all households. The Quorum will be aimed at identifying fully, partially and non dependent populations.
2. After explaining the duties and responsibilities, the Ranger will constitute an EDC within the frame work of the following rules and regulations.
3. Every household living in the chosen area is entitled to become a member of the EDC. Any two members could represent the household at least one of them being a women.
4. The Forester concerned, shall be the Ex-officio Member Secretary of the EDC.
5. Each EDC shall have an Executive Committee, tenure of which shall be one year.
6. The composition of the Executive Committee shall be as follows.
 - i) Not more than 6 elected representatives from EDC, half of them being women as members.
 - ii) Forester Concerned - Member Secretary
 - iii) Forest Guard concerned - Member
 - iv) One Representative of local NGO (Not Mandatory) - Member
7. The Executive Committee will elect its own Chair person who shall also be the Chairperson of the EDC.
8. Ranger, Forester, Forest guard & Representatives from NGO shall have voting rights to avoid the influence of external forces in the functioning of EDC.

8.5. Monitoring and Evaluation

Approval by the Eco-development Officer:

The Wild Life Warden, Gulf of Mannar National Park shall be the Eco-Development Officer. Upon the receipt of the proposal from the secretary of the EDC, the EDO may accord recognition to it after due examination of its merit. Only such recognized Committees are entitled to operate under these rules.

Duties and Responsibilities of the EDC

- i) A General body meeting of the EDC shall be held once in every 4 months to review the activities and functioning of the Executive Committee. All members are required to attend the meeting.
- ii) The members of the EDC individually and collectively shall
 - a) Ensure protection against Entry, Grazing, Fuel wood collection, pollution etc., in the bird sanctuary.
 - b) Make other Villagers aware of the importance of Birds in Agriculture, Pest control, Eco-tourism etc.,
 - c) Assist the Forest department functionaries in carrying out sanctuary development works in accordance with the approved activities

Duties and Responsibilities of the Executing Committee

The Committee will be constituted at the commencement and at the end of every term with Range officer concerned acting as a Returning officer or Forester if so,authorized by him for filling the quota of elected members.

- ii) The Executive Committee shall meet at least once a month or often as need be.
- iii) The Member secretary shall be responsible for convening the meetings and maintaining the records of Proceedings. He shall send one copy of the proceedings to the Range Officer to keep him informed and obtain necessary guidance.
- iv) The EDO or the Range officer may give directions from time to time for smooth and proper functioning of the Committee, which will be binding on the Committee.
- v) If any member of EDC is found indulging in acts against Forest laws or sound principles of conservation of Bird Sanctuary, such member may be removed from EDC taking in to consideration, the recommendations of the Executive Committee. An appeal in this regard would be with the EDO. The EDO for sufficient reasons to be recorded in writing may supersede an Executive Committee or the EDC and his decision would be final.

Role of the Range Officer

- (i) The Range Officer concerned will have the freedom to attend the EDC, General Body and Executive Committee meetings to participate in the discussions and to render advice.
- ii) Range Officer shall ensure that the meeting is conducted according to prescribed norms.

Education and Interpretation

These activities include conducting nature education camps, awareness campaigns, workshops, seminars, etc. School and college students may be given preference for attending the nature education camps followed by nature clubs and other genuinely interested groups. Necessary financial allotments may be made to support the modernization of the village school and also to promote nature education in the school. Conduct of paid nature education camps for interested groups can be entrusted to the Eco-development Committees. Nature education camps may consist of the following activities viz.

- Lecture on nature and wildlife conservation by identified resource persons
- Video and slide shows on conservation education and
- Voluntary labour from the participants for maintaining the cleanliness of the sanctuary.

CHAPTER-IX

9. RESEARCH, MONITORING AND TRAINING

9.1. Research and Monitoring

In order to improve the status of the wetland, good scientific research and monitoring protocol needs to be put in place in the wetland. The research and monitoring activity should look into the various aspects of reliable baseline data collection, water quality, biodiversity values, and siltation and its impact, abundance of various species, ecosystem response monitoring and evaluation, consistent documentation, archiving and referral system and interaction with national and international forums for collaboration on technology transfer.

The Sakkarakottai Bird Sanctuary has no in house research being conducted. However certain Research Scholars do approach the Wildlife Office for grant of permission for conducting research works largely as a part of completion of Thesis or M.Sc. project report. The sanctuary offers wide opportunities for ornithologists in studying birds and various aspects of bird's life. Efforts may be made to promote local research organizations, colleges and universities interested in undertaking habitat, floral or faunal studies in the sanctuary.

Since specialized field staff may not be adequate, help of other institutions like BNHS, SACON, NGOs and Universities will be sought. A gap analysis has to be performed to find out the areas in which basic data is lacking. As a subsequent step, a research priority matrix has to be prepared. Management should provide the necessary financial and logistic help to the institutions or individuals who are interested in carrying out research works in the fields that are a priority for the Sanctuary.

Prioritization of Research

Tamilnadu has a large number of renowned research institutions, which may be requested to conduct research and help forest department in the management of Sanctuary in a more scientific manner. Some of the research areas, which are more relevant to this wetland and could help in generating baseline data, which can be well utilized, are as follows:

1. Study to update and generate data on impact of wetland degradation on migratory and resident bird species found in the CBS.

2. Studies on integrations of wetland complexes in the vicinity of the Sanctuary, since Sakkarakottai is a small protected area and larger area of birds foraging and resting lies outside the Sanctuary too.
3. Studies on population trends and migratory pattern both spatially and temporal and studies on factors affecting the migratory pattern locally and regionally
4. Valuation studies on the ecosystem services provided by the sanctuary.

Research Topics

The following topics can be considered for research in the sanctuary, priority wise:

- i) Evaluation of lesser known and functionally important species.
- ii) An examination of the microbial ecology of lotic and lentic aquatic environments.
- iii) Studies on floral diversity and regeneration.
- iv) Monitoring of communicable diseases and health in migratory birds and surrounding commercial poultry.
- v) Assessing the effect of fire occurrence and fire prevention activities on species distribution and habitat.
- vi) An assessment of bird diversity in the sanctuary.
- vii) Habitat degradation and infestation of exotic weeds.
- viii) Migration and seasonal movement patterns of birds.
- ix) Impact of seasonal flood on bio-diversity.
- x) Monitoring prey population in the forage grounds.

9.2. Monitoring

The department should regularly monitor the water and the soil quality, the status of aquatic vegetation and water-bird diversity. Forest department conducts water-bird count every year in the winters when migration is at its peak.

Habitat monitoring, which includes study of faunal diversity, need to be undertaken regularly. It is prescribed to have permanent protocols for the monitoring of the habitat and key faunal elements. Where ever possible and needed, help and support from various institutions and organizations should be requested to carry out these programs.

Techniques and methodologies used in monitoring different events will be utilized efficiently. This will involve different stages from actual field work to record keeping. The value of the current monitoring activities for management will be assessed and documented. The activities to be monitored are given below.

Biodiversity Monitoring

Forest department with the help of few organizations working in the area conducts water bird count every year in the month of December - January. Being a Bird Sanctuary, migratory water birds should be monitored every year to understand the population trend of migratory water birds. Monitoring of breeding of different resident species and impact of wetland degradation on bird species is also needed to be done.

Monitoring of birds population and their health

- Line transect method is statistically used in the sanctuary.
- Time of census will be in January every year as all the birds are equally distributed all over the sanctuary due to availability of water everywhere.
- Study on biology and behavior of birds will be carried out with the help of scientists in BNHS or such other research organizations working on avian fauna.
- The bird's census will be done twice in a year, once in summer and another after rainy season.

Habitat Monitoring

Sakkarakottai Bird Sanctuary has a mosaic of habitats that is responsible for a rich avifauna. There is a need to monitor these habitats for long-term protection and conservation of various groups of flora and fauna in the Sanctuary. Permanent plots will be laid out in the bund areas and islands, which form the terrestrial habitat in the Sanctuary. These should then be monitored regularly for vegetation, which would help in detecting change and so help in studying succession.

Monitoring of wetland habitat may also be carried out through interpretation of satellite imageries. The spatial study has helped us to present the status of the Sanctuary and its surrounding landscape for the present year. Regular study of the satellite imageries will provide useful information regarding the dynamic changes in the river course, siltation, change in habitat and the surrounding landscape.

Vegetation Monitoring

- Growth and abundance of trees, shrubs, grasses which are palatable for herbivores and which provide cover and shelter will also be monitored.
- Estimation of ground cover percentage to be made every year after rainy season.
- Monitoring on Tree cover and its regeneration rate will be carried out every alternate year.
- Photographic record provides all time series of habitat factors undergoing change. Every year photographs should be taken from a particular vantage point.

Environmental Monitoring

Water and Soil Quality

The sanctuary receives larger portion of water from rainfall and has limited or no chances of receiving discharges whatsoever from any of the industries or factories etc. Therefore the need for rigorous monitoring is not warranted. However as part of monitoring exercise, the water and soil has to be tested to have information on the quality of the same. The samples have to be analyzed at a standard water quality testing lab for the following parameters: Temperature, Conductivity, Ph, DO, Salinity, Turbidity and Ammonia, and Phosphorous.

Bathymetry

It is prescribed that a bathymetric exercise may be carried out every two years to know about the siltation profile of the reservoir in future. The department may consider procuring an electronic echo-sounder for regular and easy bathymetry of the reservoir or such exercises could be outsourced to research institutions. Besides promoting research projects under such heads to various research scholars of various institutions, would also be a viable option.

Wildlife Health Monitoring

There is a need to regularly monitor the health of the resident fauna including the migratory birds visiting the sanctuary. The blood samples of the migratory birds should be checked regularly for any kind of disease threat especially bird-flu. On the onset of every winter a joint monitoring team (along with the Veterinary Departments) should conduct a systematic disease surveillance to detect any possibilities of bird-flu in the region. Cattle Egrets are a potential target species in this matter.

9.3 Training

Training to staff is being given every year regarding bird identification and population estimation. Besides training is given to field staff on importance of wetlands and its ecosystem.

Training is a very important tool for capacity building and improving the professionalism of the staff. The staff, while carrying on their normal duties, also needs to develop an understanding of various issues related to management at a professional level. Capacity building in this regard can best be achieved through trainings designed for this purpose.

Improving the knowledge and capacity of staff has several benefits. It helps them to carry out their duty with an increased understanding and awareness and hence with increased dedication. It gives them more confidence in their work. This helps them to deal with various stakeholder groups, such as local people and tourists, with more confidence. Improved skills and knowledge will improve their productivity and quality of output. Some areas where training will benefit the staff are as follows:

- i. Knowledge and identification of bird species found in the sanctuary, Habits of species, biology and ecology of important species
- ii. Elementary knowledge of reptile, amphibians, lepidoptera species found in the sanctuary
- iii. Knowledge and identification of plants, including medicinal plants found in the area
- iv. Wetland ecology, interdependence of plant and animal species
- v. Monitoring methods, population estimation methods
- vi. Anti-poaching skills and documentation of offence cases
- vii. Conflict resolution skills for dealing with local people
- viii. Weapon training
- ix. Use of instruments such as compass, binoculars, digital camera, GPS
- x. GPS skills
- xi. Computer literacy

Field staff will be given small projects on which they should collect information from the field such as information on bird or plant species. Training should also be imparted

to local people, particularly eco-guides and tour operators with the intention of upgrading their skills for tourism.

Some important training subjects are:

- i. Wildlife (Protection) Act, 1972
- ii. Skills of dealing with tourists
- iii. Interpretational skills
- iv. Skills on identification of bird species
- v. Basic wetland ecology.

Professional organizations should be involved in developing and conducting training programs. Officers of the department should also be involved in training programs.

9.3.1 On the job training

Inadequate frontline staff has always been a limiting factor for sending them on training courses outside the protected area. Therefore, on the job training in the areas already identified will be conducted for them.

9.3.2 Formal Training Courses

Wildlife Institute of India runs many refresher courses and workshops in different PAs all over the Country. This should be taken advantage of and officers from the PAs sent regularly to attend these courses. Following are some of the courses conducted by the Wildlife Institute of India.

Table 3: Some courses conducted by the Wildlife Institute of India, Dehradun

S.No	Name of Course	Duration	Eligibility
1.	Post graduate diploma course in wildlife management	9 months	DCF & ACF
2.	Certificate course in wildlife management	3 months	RFO
3.	Wildlife management training	3 months	FR & FG
4.	Wireless operation and weapon training at police academy.	-	FR & FG
5.	Tourism management, receptionist, interpretation.	-	ACF & RFO
6.	Wildlife health, chemical	-	RFO & FR

	immobilization, power fencing		
7.	Capsule course in wildlife	7-15 days	CCF & CF
8.	Remote sensing at IIRS-Dehradun	10 months	DCF & ACF

9.3.3 Establishing a Learning Centre

Several of our offence cases, fail in courts of law due to improper recording, inadequate processing and wrong interpretation of legal provisions. Prosecution capabilities of the staff are required to be strengthened. A few sample cases of both success and failure can be selected by the officers of the Forest Department and with the assistance of a Legal Advisor, discussed with other lower staff periodically, so that a set of guidelines are prepared as to how a case is to be dealt with. Week training by legal experts will be adding more advantage to staffs.

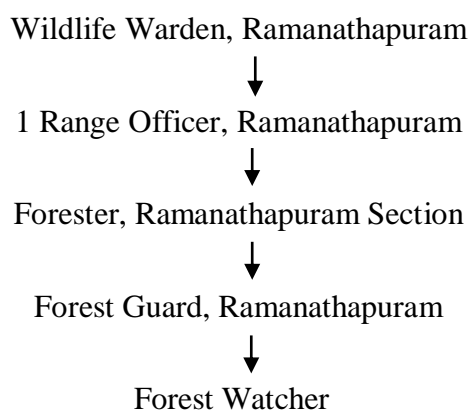
CHAPTER-X

10. ORGANIZATION AND ADMINISTRATION

10.1 Structure and Responsibilities

Presently the sanctuary is under the overall Jurisdiction of the Wildlife Warden, Gulf of Mannar Marine National Park. Range Officer, Ramnad is tasked with the control and management of the Bird Sanctuary and he is assisted by one Forester, Ramnad and one Forest Guard. The present setup will continue to function until the anti-poaching watchers are engaged on temporary basis from the Sanctuary village itself. Besides a Forest Watcher may be additionally required to assist the Forest Guard, since the Forest Guard, Ramanathapuram is also having Mangrove forests to be protected.

Existing Administrative setup



10.2. Staff amenities

Basic amenities like quarters for Forest Guard and Forest Watcher exist in the Ramanathapuram Town itself, which is just 15 Km from Therthangal village.

All seasonal staff is to be provided with 2 pairs of khaki or camouflage uniform with sanctuary badge and hunter shoes in a year.

CHAPTER-XI

11. THE BUDGET

11.1 The Plan budget

11.1.1. Financial Forecasting:

The financial implications of the Management Plan for the period 2023-2024 to 2032-2033 are as detailed in following paragraphs. The financial projections have been made for the following management prescriptions which are to be carried out during the plan period.

The Budgetary requirement for the proposed activities is given below in phased manner (annual) in the chapter.

11.1.2. Summary of Works:

i. Deepening of tank

Sakkarakottai Bird Sanctuary is one of the renowned tanks in Ramanathapuram with a very unique history. The local people have been protecting the Sanctuary for centuries because they have realized that the bird droppings falling into the tank create a liquid guano effect. Thus, the water when used to irrigate crop fields increases the agricultural productivity greatly and saves the cost of fertilizers. Sakkarakottai displays one of the most concentrated populations of different species of birds in a compact area and thus it is an ornithologist's paradise. In order to increase the capacity and duration of water storage in the tank it is necessary to deepen the tank. This will in turn attracts more birds and will prolong their stay for a longer period of time.

ii. Desilting and Cleaning of the channels

Water from the Vigai River through a channel from Periyakanmoi Tank comes into Sakkarakottai tank. Hence the channels carrying water from Vaigai River to Sakkarakottai need to be desilted to enable Sakkarakottai tank to be filled up during north east monsoon.

iii. Uprootal / removal of *Prosopis*, *Ipomea carnea*, etc.,

The tank is partly rainfed and partly fed by feeder channels. There is lot of evapo-transpirational loss of water due to the presence of *Prosopis* found along the bunds. It is to be removed, as it poses a threat of invading into the tank water spread area. The young recruits within the tank also need to be removed frequently. *Ipomea*

carnea is a fast invader and will replace other native vegetation from the site. Hence, the invasive species should be removed in order to prevent loss of water and destruction of habitat.

iv. **Planting of *Acacia nilotica***

Acacia nilotica is the main species on which the birds roost in the Sakkarakottai Bird sanctuary. Sakkarakottai lacks extensive stands of *Acacia nilotica* trees and therefore offering less scope for breeding and nesting of heronry species. Taller seedlings can be planted and provided with inputs like farm yard manure, VAM etc., Tree guards or fencing the entire block need to be provided to prevent damage. If only all these components and the amount indicated are given in entirety a successful plantation can be raised which would serve as a habitat to the birds.

v. **Planting taller seedlings in the vicinity of the Bird Sanctuary and supply of multipurpose and fruit bearing seedlings in the ecological boundary.**

The sanctuary surrounding is devoid of evergreen trees and vegetation except for the *Prosopis juliflora*. Planting taller seedlings would create a microclimate conducive for birds.

vi. **Creation of Ponds**

The sanctuary falls within the arid zone and the tank is being used for irrigation purpose as well. Though there is a general conservation feeling among the villagers towards avian fauna conservation but when it comes to livelihood of the villagers then agriculture takes the upper hand. Thereby during the post rainy season, the water is drawn from the tank for irrigating the agriculture fields. Thus, the water storage is hindered from prolonging up to May – June. Therefore, in order to retain water within the tank for a prolonged period, small ponds are essential so that they are below the level of sluice gates so that the water is not drained out. This would render prolonged stay of the winter migratory birds and in turn help in breeding.

vii. **Creation of Mounds / Islands**

The sanctuary being an earthen tank, does not provide great diversity in terms of the habitat types like the deep waters, shallow waters, mud flats, islands, shallow slopes etc., in order to provide variation in the habitat types so as to invite bird diversity, it is essential to create such structures so as to attract bird diversity.

viii. Releasing fish fingerlings

Fingerlings must be released in the tank annually to ensure steady food supply for the birds coming to the Sanctuary.

ix. Conducting periodical bird census

The bird population can be monitored by conducting periodical i.e. monthly bird census for a period of six months starting from October to March. This will help us study the trends in bird arrival, stay, feeding and breeding.

x. Introduction of emergent plants on the edges of shore area

Emergent plants like *Typha*, *Arundodonax*, *Ipomea aquatic*, *Hygrophila auriculata*, *Polygonum glabrum*, *Oryza rufipogon*, *Saccharum sp*, etc., can be introduced on the edges of shore area. Gentle sloppy slopes should be provided at the shores to facilitate growth of aquatic vegetation to promote the use of this area by shore birds like stilts, shanks, sandpiper, etc.,

xi. Conducting anti-poaching camps during the season with the help of anti-poaching watchers

Around 5000 birds of 30 and odd species visit Sakkarakottai Bird Sanctuary every year. These birds need to be protected from poaching. Hence, anti-poaching watchers are necessary to patrol the area and protect the birds from poaching.

xii. Creation of fodder banks away from the tank

Occasional grazing is found in the sanctuary and this will have a negative impact on the dynamics of the wetland ecosystem by way of creating opening in the vegetation, soil disturbances, invasion of weeds and other alien species. Complete control of grazing will have a negative impact on the livelihood of the adjacent villagers as well as in the rapport of the department with the people. Hence, it is proposed to create fodder banks of preferred species in an area away from the tank in order to cater to the needs of the villagers while protecting the tank from grazing.

xiii. Eco awareness camps

With the introduction of environment studies as a compulsory subject in the school and college curriculum, many students are willing to visit Sakkarakottai Bird Sanctuary. This apart a lot of other visitors are also coming to Sakkarakottai Bird Sanctuary. To create the right kind of awareness regarding Wildlife and Bio-diversity conservation Eco camps may be conducted every year.

xiv. Improvement of signages, boards and interpretation center

To create the awareness about the importance of Wildlife and Bio-diversity conservation and to highlight the role of Sakkarakottai Bird Sanctuary in conservation of birds, the interpretation facilities at Sakkarakottai Birds Sanctuary have to be improved.

xv. Construction and improvement of viewpoints, watch towers

Watch towers need to be constructed and improved so as to have a better view of birds by the public and to enable efficient and better monitoring by department staff.

xvi. Improvement of visitor's facilities such as walk paths, rest sheds, toilets, drinking water facilities, benches, etc.,

Sakkarakottai Birds Sanctuary being an important wetland, large number of visitors comes to see the migratory birds and to study the eco system. It is required to provide them with better staying facilities and toilets etc., so that more visitors can be attracted and the importance of sanctuary highlighted. Visitor amenities like sitting benches, shelter sheds, drinking water facility should be provided for visitors who come to watch birds and to take rest in the sanctuary.

xvii. Purchase of books, journals, etc., on Water Birds, Wetlands and publicity and printing of brochures

Water Birds books, journals etc. need to be purchased and the available checklist of water birds and brochures on the sanctuary needs to be reprinted. Awareness can be created by preparing publicity material and distributing among the Visitors, Public and school children. For preparing publicity material, computer, camera, projector etc., needs to be purchased.

xviii. Providing fencing to prevent trespassing into Sakkarakottai Bird Sanctuary

The Sakkarakottai Bird Sanctuary is abutting the Sakkarakottai village. The sanctuary is under the constant threat of grazing and hence it is proposed to create fencing around the boundary so that the livestock and cattle are kept away.

xix. Research / ecosystem study and monitoring works

Periodical studies have to be undertaken during the duration of this Management Plan in Sakkarakottai to fill up the gaps in research and monitoring. Similarly, an inventory of vegetation including micro flora, checklist of species which serve as food to the birds, population dynamics of various species of birds, inter and intra species relationship, ecological niche of each species, specific habitat

requirements etc., are some of the fields of research which should be undertaken. The work is proposed to be undertaken through part time research scholars interested in wildlife, with each study for duration of one year.

xx. Skill Development Training and Exposure Visit to field staff

Training needs to be provided to the field staff on habitat management and on birds to guide the visitors. To ensure successful implementation of wildlife management proposals, on-the-job training for 15 days needs to be given to watchers, guides and mazdoors locally by officers of Deputy Conservator of Forests rank, already trained in wildlife. The watchers have lot of knowledge and so training can be directed for training them on how to document the data collected and also on presentation skills to act as tourist guides. Exposure visits to other protected areas will supplement the knowledge of field staff.

xxi. Eco Development Works

To elicit the co-operation of people in protecting the birds, eco development activities need to be undertaken. The road abutting the sanctuary has to be repaired for easy communication of villagers.

xxii. Vaccination of livestock around the Bird Sanctuary

Disease is a natural component of population ecology and ecosystems and is one mechanism by which population numbers are regulated. However, anthropogenic activities can often create novel disease problems or increases in prevalence and frequency of existing disease, tipping a 'balanced' system into one where losses are increased. Vaccination programmes, often supplemented by other disease control measures, can help control and even eliminate diseases affecting livestock.

xxiii. Eco Tourism

It is proposed to develop Eco Tourism in the Sakkarakottai Bird Sanctuary, Visitor Amenities, interpretations facilities, signages, information boards reading material etc., have to be provided. Eco Tourism should be taken up involving EDC. This component would include publicity, nature camps, learning gardens, improved interpretations center, Environment education techniques, nature trails etc.,

Table 4: Budget estimates for 2023 – 2024 to 2032 – 2033

(Rupees in Lakhs)

S. No.	Description of Work	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
1	Habitat Management										
a	Raising Babul and other roosting tree Plantation	1	1.1	1.21	1.331	1.4641	1.610	1.770	1.947	2.141	2.355
b	Release of fish fingerlings to enrich the feeding ground for the birds	1.6	1.76	1.94	2.13	2.34	2.574	2.831	3.114	3.425	3.767
c	Formation of water hole inside the Sanctuary	5	5.50	6.05	6.66	7.32	8.052	8.857	9.742	10.717	11.788
d	Desilting water way for the tank (feeder channel)	7	7.70	8.47	9.32	10.25	11.275	12.402	13.642	15.007	16.507
e	Deepening of Tank to improve eco system	7	7.70	8.47	9.32	10.25	11.275	12.402	13.642	15.007	16.507
f	Providing mounds inside the tank	7	7.70	8.47	9.32	10.25	11.275	12.402	13.642	15.007	16.507
g	Clearing of invasive growth of Prosopis juliflora	8	8.80	9.68	10.65	11.71	12.881	14.169	15.586	17.144	18.859

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

h	Supply of multipurpose tree species to villages in and around the sanctuary	3	3.30	3.63	3.99	4.39	4.829	5.311	5.843	6.427	7.070
i	Planting taller seedlings in and around the sanctuary	2	2.20	2.42	2.66	2.93	3.223	3.545	3.899	4.289	4.718
2	Protection										
a	Construction of New steel bird watch tower	2	0	0	0	0	0	0	0	0	0
b	Maintenance and improvement of Bird Watch Tower	10	11.00	12.10	13.31	14.64	16.104	17.714	19.485	21.434	23.577
c	Improvement of forest staff quarters	0.5	0.55	0.6	0.65	0.7	0.77	0.846	0.931	1.024	1.127
d	Purchasing Rescue Veterinary Van	30.00	-	-	-	-	-	-	-	-	
e	Fuel for Rescue Veterinary Van	0.60	0.66	0.72	0.78	0.85	0.935	1.028	1.131	1.244	1.368
f	Fencing along the peripheral boundary of the Bird sanctuary	20	-	15	10	10	8	8	7	6	5
g	Engaging birds Protection watcher	3.24	3.56	3.92	4.31	4.74	5.214	5.735	6.308	6.939	7.633

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

h	Survey for boundary demarcation and laying of survey stones.	4	4.40	4.84	5.32	5.86	6.446	7.090	7.799	8.579	9.437
i	Construction of Cairns	3	3.30	3.63	3.99	4.39	4.829	5.311	5.843	6.427	7.070
j	Maintenance of sanctuary interpretations centre building	5	5.50	6.05	6.66	7.32	8.052	8.857	9.742	10.717	11.788
k	Awards to committed field staff	1	1.10	1.21	1.33	1.46	1.606	1.766	1.943	2.137	2.351
3	Awareness and Publicity										
a	Conducting nature camps to College, School students and EDC members	2	2.20	2.42	2.66	2.93	3.223	3.545	3.899	4.289	4.718
b	Awareness creation and publicity board	3	3.30	3.63	3.99	4.39	4.829	5.311	5.843	6.427	7.070
c	Maintenance of older boards	2	2.20	2.42	2.66	2.93	3.223	3.545	3.899	4.289	4.718
d	Printing publicity materials such as stickers, Pamphlets, booklets etc.,	3	3.30	3.63	3.99	4.39	4.829	5.311	5.843	6.427	7.070
e	Education and training to staff	3	3.30	3.63	3.99	4.39	4.829	5.311	5.843	6.427	7.070

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

4	Eco Development Activities (Community based works)										
a	Entry Point activities community based work	12	13.20	14.52	15.97	17.57	19.327	21.259	23.385	25.724	28.296
b	EDC formation and corpus fund	25	27.50	30.25	33.28	36.60	40.26	44.286	48.714	53.586	58.944
c	Creation of fodder banks in the community lands and government paramboke lands of the village	5	5.50	6.05	6.66	7.32	8.052	8.857	9.742	10.717	11.788
d	Supply of cooking vessels for community function	1	1.10	1.21	1.33	1.46	1.606	1.766	1.943	2.137	2.351
e	Supply of school bags to school children	1.5	1.65	1.82	2.00	2.20	2.42	2.662	2.928	3.221	3.543
f	Adjoining school improvement	3	3.30	3.63	3.99	4.39	4.829	5.311	5.843	6.427	7.070
g	Micro credit for Villagers	15	15	15	15	15	15	15	15	15	15
5	Eco - Tourism										
a	Wildlife Week Celebration	1	1.10	1.21	1.33	1.46	1.606	1.766	1.943	2.137	2.351
b	Nature trails	1	1.10	1.21	1.33	1.46	1.606	1.766	1.943	2.137	2.351
c	Providing drinking water facilities	2	2.20	2.42	2.66	2.93	3.223	3.545	3.899	4.289	4.718

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

d	Engaging Tourist guides/training Eco guides	1	1.10	1.21	1.33	1.46	1.606	1.766	1.943	2.137	2.351
e	Improvement of visitors facilities \ amenities, watch towers, providing exhibits, etc.,	12	13.20	14.52	15.97	17.57	19.327	21.259	23.385	25.724	28.296
f	Construction of Toilet for Visitors	4.00	-	0.50	-	0.50	-	0.50	-	0.50	-
6	Research										
a	Habitat & Ecosystem study in Sakkarakottai Bird Sanctuary	8	8.80	9.68	10.65	11.71	12.881	14.169	15.586	17.144	18.859
b	Breeding and Migratory pattern study in Sakkarakottai Bird Sanctuary	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
7	Village Development										
a	Cement floor for village function	2.00	-	-	-	-					
b	Supply of Horticulture saplings to families @ 20 / land owner	0.60	0.75	0.80	0.90	1.00	1.1	1.21	1.331	1.464	1.610
c	Community Development works in Villages	3	3.30	3.63	3.99	4.39	4.829	5.311	5.843	6.427	7.070

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

d	Sport articles to youth of villages	3	3.30	3.63	3.99	4.39	4.829	5.311	5.843	6.427	7.070
8	Monitoring										
a	Sanctuary Monitoring committee	1	1.10	1.21	1.33	1.46	1.606	1.766	1.943	2.137	2.351
b	Census (Birds Population Estimation)	1.5	1.65	1.82	2.00	2.20	2.42	2.662	2.928	3.221	3.543
c	Engaging on Ornithologists for birds identification and for field study	3.6	3.96	4.36	4.79	5.27	5.797	6.376	7.014	7.715	8.487
	Total	242.64	201.44	235.32	250.012	272.734	294.704	322.04	350.222	382.295	416.624

11.1.3. Fund Flow

The funds for the development and management of the Bird Sanctuary are sourced only through the plan schemes. Largely the Government of India funded Centrally Sponsored Scheme under the ‘Integrated Development of Wildlife Habitat’ is the only source of funding to the Sanctuary. Besides other sources for fund flow could be as follows,

- (a) Tourism Department fund under Eco-Tourism
- (b) EPRED State scheme, Environment Department

CHAPTER-XII

12. The Schedule of Operations and Miscellaneous Regulations

12.1. The Schedule

The schedule of operations drives management interventions in a series of ordered annual tasks. It details the annual physical targets and corresponding financial allocations reflected in the budget. The various prescriptions proposed in the management plan have been given in detail in the respective chapters. On the basis of these prescriptions the annual plan of operation could be prepared by the Wildlife Warden, Wildlife Division, Ramanathapuram for which budgetary provisions can be made and on approval item of works can then be carried out. According to budget provision, preparation of advance plan of every year will facilitate making of budget provisions and sustainable planning as per requirement of Management Plan. The items of work that cannot be completed in a particular year due to lack of budget provision or late receipt of budget could be carried forward in the next year's plan of operation.

12.2. Record of Deviations and Implemented Targets

The record of deviations from the Management plan prescriptions needs to be maintained. At the time of revision of the management plan these deviations need to be referred to especially on matters which relate to strategy in the field. The record of deviation statements are usually not maintained properly. The management should ensure that the deviation statements maintained properly as per prescription of management plan.

12.3. The Record of Employment Potential

It is important to know the man-days created in a financial year for different works. This not only gives the employment generated by bird sanctuary but also gives the expenditure incurred against each theme/work in a given month and accordingly the total wage component sized during the year. The concerned wildlife Range Officer should thus maintain a register for such labour generation in different schemes.

12.4. Control Forms

Principal control forms constitute with sub-unit together. All follow in their appropriate order. At the end of each financial year all the control forms are to be posted. To facilitate in posting of information, each range should maintain register. Now a day when computers are available at the range level, then this task of updating information in control form is much easier.

12.5. Maintenance of Compartment Histories

Maintenance of compartment history is a well defined practice in the management of forests. Unfortunately this practice is not being given due importance in management of wildlife and is found lacking in most cases. The compartment history is an important document and should be maintained.

12.6. A Pocket Field Guide for Plan Implementation

Give the Pocket Field Guide to all rangers and forester, they follow the Field guide instruction while implement the plan.

Abbreviation used

ACFs	Assistant Conservator of Forests
CF	Conservator of Forests
CSS	Centrally Sponsored Scheme
CSMCRI	Central Salt Marine Chemical Research Institute
DFO	District Forest Officer
DO	Dissolved Oxygen
EDC	Eco-development Committee
EDO	Eco Development Officer
G.O	Government order
GIS	Geographical Information System
GOMMNP	Gulf of Mannar Marine National Park
GPS	Global Positioning System
IDWH	Integrated Development of Wildlife Habitat
IUCN	International Union for Conservation of Nature
MSNP	Management of Sanctuary and National Park
NEMS	North East Monsoon
NGO	Non-Government Organization
NEC	Nature Education Camp
PWD	Public work department
TWAD	Tamil Nadu Water and Drainage Department
WII	Wildlife Institute of India
WLW	Wildlife Warden

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ANNEXURE – I

**GOVERNMENT GAZETTE NOTIFICATION AND GOVERNMENT
ORDER**

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Part II—Section 2

**Notifications or Orders of interest to a section of the public
issued by Secretariat Departments.**

NOTIFICATIONS BY GOVERNMENT

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Formation of Sakkarakottai Tank Birds Sanctuary under**Wildlife (Protection) Act.**

[G.O. Ms. No. 114, Environment and Forests (FR.5),
17th April 2012.]

No. II(2)/EF/238/2012.—In exercise of the powers conferred by sub-section (1) of Section 18 of the Wildlife (Protection) Act, 1972 (Central Act 53 of 1972), the Governor of Tamil Nadu hereby declares the intention of the Government of Tamil Nadu to constitute the area, the boundaries which are specified in the Schedule below to be a sanctuary, for adequate ecological, faunal, floral, geomorphological, natural and zoological significance, for the purpose of protecting propagating and developing wildlife and its environment.

SCHEDULE

1. Name of the District : Ramanathapuram
2. Name of the Taluk : Ramanathapuram
3. Name of the Village and : Village Survey Extent in
Survey Number with Number Number Has.
Area

49.	68	78.60.5
Sakkarakottai		
44.	383	68.70.0
Rajasuryamadaï 209		
45.	25	19.12.0
Achchadipirambu		
Total —		230.49.5

BOUNDRIES:

North.—Starting from trijunction points of Survey Nos. 66, 50, 49 and runs towards southern side along the western boundary Ramanathapuram to Keelakarai Road having Survey No. 92 of Village No. 49. Sakkarakottai Village.

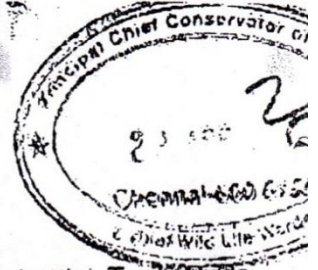
East.—Thence the Boundary runs towards southern side along the western boundary of Survey Nos. 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, 79 of Ramanathapuram to Keelakarai Road of Village No. 49. Sakkarakottai Village.

South.—Thence the boundary runs towards western side along the northern boundary of Survey No. 77 of Ramanathapuram to Keelakarai road of Village No. 49. Sakkarakottai Village and meets the trijunction points of Village No. 49. Sakkarakottai Village and Village No. 44. Rajasuryamadaï Village. Thence the boundary runs towards western side along the northern boundary of Survey Nos. 437, 435, 430, 429, 388 (Urani) 387, 386 (northern side of Uppu Udaippu Urani) 385, 384 and 490, of Village No. 44. Rajasuryamadaï Village and meets the trijunction points of Village No. 44. Rajasuryamadaï and Village No. 45. Achchadipirambu Villages. Thence the boundary runs towards western side along the northern boundary of Survey Nos. 54, 53, 28, 27 and 26 of the Village No. 45. Achchadipirambu Village and meets the bijunction points of Village No. 45.

Achchadipirambu Village and Village No. 44. Rajasuryamadaï Villages. Thence the boundary runs towards western side along the northern boundary of Survey Nos. 175, 179, 185, 180, 184, 198, 199, 200, 207, 208, 59, 58 and 55 and runs towards north west side and north east boundary of Survey No. 26. of Village No. 44. Rajasuryamadaï. Thence the boundary runs towards northern side and north east boundary of Survey Nos. 25, 10 and 5 of Village No. 44. of Rajasuryamadaï and meets the bijunction points of Village No. 44. Rajasuryamadaï and Puttendal Village.

West.—Thence the boundary runs towards north eastern side and turns to south western side of Puthandal Village. Thence runs towards southern side along the western boundary of Survey No. 210 and runs towards eastern side along the southern boundary of Survey Nos. 211, 212, 213, 214, 215, 216, 220, 221, 222, 223, 225, 230, 231, 232, 235 and 236 and meets the bijunction points of Village No. 44. Rajasuryamadaï and Village No. 45. Achchadipirambu Villages. Thence runs towards eastern side along the southern boundary of Survey Nos. 18, 19, 20, 21, 22, 23 and 24 of Village No. 45. Achchadipirambu Village and meets the points of Village No. 45. Achchadipirambu and Village No. 44. Rajasuryamadaï Village. Thence runs towards north eastern side along the southern boundary of Survey Nos. 275, 276, 277, 278, 279, 348, 349, 350, 353, 355, 356 and 382 of Village No. 44. Rajasuryamadaï Village and meets the bijunction points of Village No. 44. Rajasuryamadaï and Village No. 49. Sakkarakottai Villages. Thence the boundary runs towards northern side along the eastern boundary of Survey No. 382. of Village No. 44. Rajasuryamadaï and Survey Nos. 76, 75, 74, 73, 72, 71, 70, 69, 67 and 66 of Village No. 49. Sakkarakottai Village and also Survey No. 366 of Village No. 44. Rajasuryamadaï Village and thence joins the starting point.

C.V. SANKAR,
Principal Secretary to Government.



ABSTRACT

Forest – Wildlife – Ramanathapuram District-Formation of Sakkarakottai Tank Birds Sanctuary –under Section 18(1) of the Wildlife (Protection) Act 1972 – Orders issued.

ENVIRONMENT AND FORESTS (FR.5) DEPARTMENT

G.O.Ms.No.114

Dated 17.04.2012

Read:

1. From the Principal Chief Conservator of Forests and Chief Wildlife Warden letter No.WL5/51305/2010, dated 1.12.2010.
2. From the Principal Secretary and Commissioner of Land Administration, Chennai-5 letter No.T2/38657/10, dated 25.2.2011.

ORDER:-

The Principal Chief Conservator of Forests and Chief Wildlife Warden in the letter first read above has sent proposal to Government for the formation of Sakkarakottai Tank Birds Sanctuary under Section 18 (1) of the Wildlife (Protection) Act, 1972.

2. The Government examined the above said proposal in detail in consultation with the Principal Secretary and Commissioner of Land Administration and accord approval subject to the following conditions:-

- (i). To Establish sanctuary in the Sakkarakottai Kanmai no major permanent Renovation works to be undertaken .
- (ii). The Sanctuary has to be established without causing any damage to the bunds, culvert, madai of the Sakkarakottai Kanmai.
- (iii). The Sanctuary works has to be done under the supervision of Assistant Executive Engineer, Public Works Department, Uthirakosamangayar Basin, Ramanathapuyam.
- (iv). There should not be any hindrance to the maintenance work wherever necessary by the Public Works department.
- (v) The Ayacutdars should not be any way affected.

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3. The appended notification shall be published both in English and Tamil in the next issue of the Tamil Nadu Government Gazette and in Tamil in the District Gazette of the Ramanathapuram District.

4. The Tamil Development and Religious Endowments Department is requested to send immediately a Tamil Translation of the Notification to the Works Manager, Government Central Press, Chennai for publication in the Tamil Nadu Government Gazette and in the District Gazette of Ramanathapuram.

5. The Works Manager, Government Central Press, Chennai is requested to send 20 copies of the Gazette notification to the Government, Principal Chief Conservator of Forests, and to the Principal Chief Conservator of Forests and Chief Wildlife Warden and to the Collector of Ramanathapuram District as soon as the notification is published.

(BY ORDER OF THE GOVERNOR)

C.V.SANKAR
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Works Manager, Government Central Press, Chennai-79.

The Principal Chief Conservator of Forests, Chennai-15

The Principal Chief Conservator of Forests & Chief Wildlife Warden, Chennai-15.

The Tamil Development, Culture and Religious Endowment Department, Chennai-9.

The Secretary to Government of India,

Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, Lodhi Road, New Delhi-110 003.

The District Collector, Ramanathapuram.

/FORWARDED BY ORDER/

SECTION OFFICER

APPENDIX.**NOTIFICATION.**

In exercise of the powers conferred by sub-section (1) of section 18 of the Wildlife (Protection) Act, 1972 (Central Act 53 of 1972), the Governor of Tamil Nadu hereby declares the intention of the Government of Tamil Nadu to constitute the area, the boundaries which are specified in the Schedule below to be a sanctuary, for adequate ecological, faunal, floral, geomorphological, natural and zoological significance, for the purpose of protecting, propagating and developing wildlife and its environment.

SCHEDULE

1.	Name of the District	Ramanathapuram		
2.	Name of the Taluk	Ramanathapuram		
3.	Name of the village and survey Number with area	Village number	Survey number	Extent in Ha.
		49 Sakkarakottai	68	78 60.5
		44 Rajasuriyamadai	383 209	68.70 0 64.07 0
		45 Achadipirambu	25	19.12 0
	Total			230.49.5

BOUNDRIES

North.- Starting from trijunction points of survey Nos. 66, 50, 49 and runs towards southern side along the western boundary Ramanathapuram to Keelakarai Road having Survey No 92 of village No.49 Sakkarakottai Village.

East.- Thence the boundary runs towards southern side along the western boundary of survey Nos. 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, 79 of Ramanathapuram to Keelakarai road of village No. 49 Sakkarakottai village.

P.T.O.

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South.- Thence the boundary runs towards western side along the northern boundary of survey No.77 of Ramanathapuram to Keelakarai road of village No.49 Sakkarakottai village and meets the trijunction points of village No.49 Sakkarakottai village and village No.44 Rajasuryamadai village. Thence the boundary runs towards western side along the northern boundary of survey Nos. 437, 435, 430, 429, 388 (Urani) 387, 386 (Northern side of uppu udaippu urani) 385, 384, 490 of village No.44 Rajasuryamadai village and meets the trijunction points of village No.44 Rajasuryamadai and village No.45 Achchadipirambu villages. Thence the boundary runs towards western side along the northern boundary of survey No.54, 53, 28, 27, 26 of the village No.45 Achchadipirambu village and meets the bijunction points of village No.45 Achchadipirambu village and village No.44 Rajasuryamadai villages.

Thence the boundary runs towards western side along the northern boundary of survey Nos. 175, 179, 185, 180, 184, 198, 199, 200, 207, 208, 59, 58, 55 and runs towards north west side and north east boundary of survey No.26 of village No.44 Rajasuryamadai. Thence the boundary runs towards northern side and north east boundary of survey Nos. 25, 10 and 5 of village No.44 of Rajasuryamadai and meets the bijunction points of village No.44 Rajasuryamadai and Puttendal village.

West.- Thence the boundary runs towards north eastern side and turns to south western side of Puthandal village. Thence runs towards southern side along the western boundary of survey No.210 and runs towards eastern side along the southern boundary of survey No.211, 212, 213, 214, 215, 216, 220, 221, 222, 223, 225, 230, 231, 232, 235, 236 and meets the bijunction points of village No.44 Rajasuryamadai and village No.45 Achchadipirambu villages. Thence runs towards eastern side along the southern boundary of survey Nos. 18, 19, 20, 21, 22, 23, 24 of village No.45 Achchadipirambu village and meets the points of village No.45 Achchadipirambu and village No.44 Rajasuryamadai village. Thence runs towards north eastern side along the southern boundary of Survey Nos. 275, 276, 277, 278, 279, 348, 349, 350, 353, 355, 356, 382 of village No.44 Rajasuryamadai village and meets the bijunction points of village No.44 Rajasuryamadai and village No.49 Sakkarakottai villages. Thence the boundary runs towards northern side along the eastern boundary of survey No.382 of village No.44 Rajasuryamadai and survey Nos. 76, 75, 74, 73, 72, 71, 70, 69, 67 and 66 of village No.49 Sakkarakottai village and also survey No.366 of village No.44 Rajasuryamadai village and thence joins the starting point.

C.V. SANKAR
PRINCIPAL SECRETARY TO GOVERNMENT

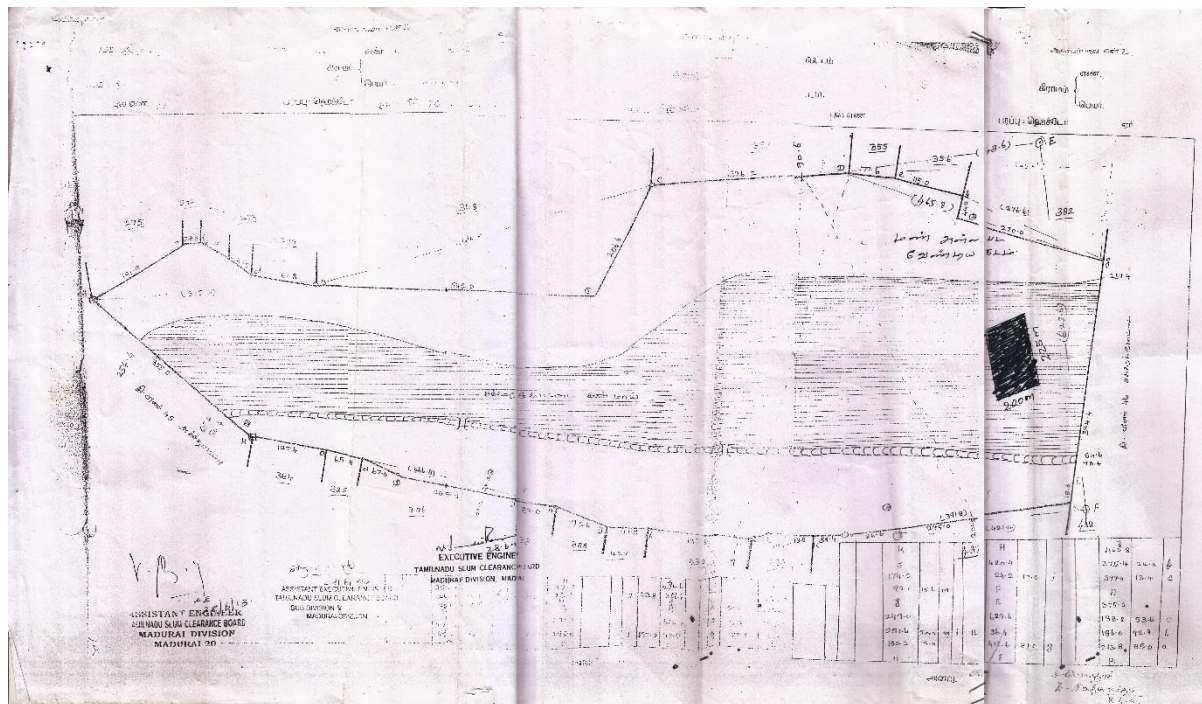
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SECTION OFFICER

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ANNEXURE IA

FIELD MEASUREMENT BOOK EXTRACT OF SAKKARAKOTTAI TANK



ANNEXURE II (a & b)**LIST OF TANKS AND PONDS WITHIN 2 KM AROUND SAKKARAKOTTAI BIRD SANCTUARY****(a) – Tanks (Locally called Kanmois’)**

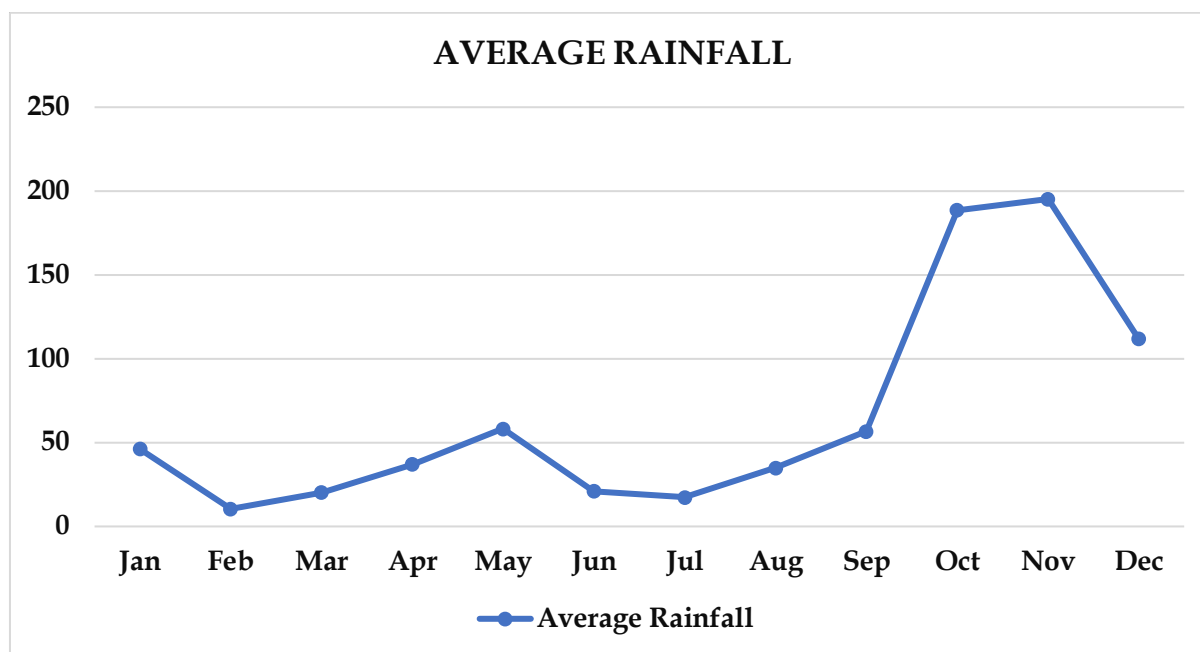
Sl. No	Name	Remarks
1	Kannarendal	Prosopis invaded
2	Achadipirambu	Prosopis invaded
3	Palkkarai	Prosopis invaded
4	Vittanur	Prosopis invaded
5	Vannikkudi (large)	Prosopis invaded
6	Vannikkudi (small)	Prosopis invaded
7	Puttendal	Prosopis invaded
8	PeriyaTamaraikudi (large)	Prosopis invaded
9	PeriyaTamaraikudi (small)	Prosopis invaded
10	Settrandal	Prosopis invaded
11	Kuriyur	Prosopis invaded

(b) - Ponds – Locally called ‘Oorani’

S. No	Name	Remarks
1	Palkkarai	Muddy water
2	Ayyarmadam	Muddy water
3	Neelakandi	Muddy water
4	MagaloduOorani	Muddy water
5	AmmankoilOorani	Muddy water
6	KalyanamahalOorani	Muddy water
7	SempadachiOorani	Muddy water
8	VannanOorani	Muddy water

ANNEXURE III (a, & b) – RAINFALL (IN MM)**III (a) - Monthly Average Rainfall from 2012 to 2021**

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
2012	8.63	1.37	6.81	38.13	7.58	0	19.56	20.13	46.96	330.8	56.56	62.01	54.41
2013	35.31	63.71	62.39	14.74	11.29	6.38	8.93	38.22	14.3	87.65	138.09	136.9	51.49
2014	39.18	17.15	0	0	167.52	0	0	32.41	59.64	315.52	235.03	80.69	118.39
2015	1.95	4.9	20.67	162.24	141.87	2.32	33.8	60.39	58.55	140.71	302.09	184.5	92.83
2016	0.56	1.89	0.59	5.68	91.38	8.82	18.03	15.23	32.59	40.79	92.25	40.83	29.05
2017	72.77	5.58	31.86	0	23.92	35.87	13.64	68.49	69.14	61.82	163.83	53.02	54.54
2018	1.01	0.59	18.08	26.11	53.82	15.51	12.69	23.01	45.86	221.14	217.91	28.07	55.31
2019	0	0.44	0	8.18	3.35	0	11.77	43.32	83.91	384.41	188.34	189.79	101.5
2020	7.02	6.26	0.91	26.91	42.85	49.05	26.61	23.19	79.06	97.32	187.61	298.46	70.43
2021	248.74	2.71	0	15.10	38.86	29.68	12.22	24.63	77.81	206.32	370.87	44.15	100.72
Average Rainfall	46.13	10.46	20.19	37.13	58.24	21.09	17.47	34.90	56.79	188.64	195.26	111.84	72.86

III (b) - Graph I: Monthly Average Rainfall from 2012 to 2021(In mm)**III (c) – Number of Rainy days in every season**

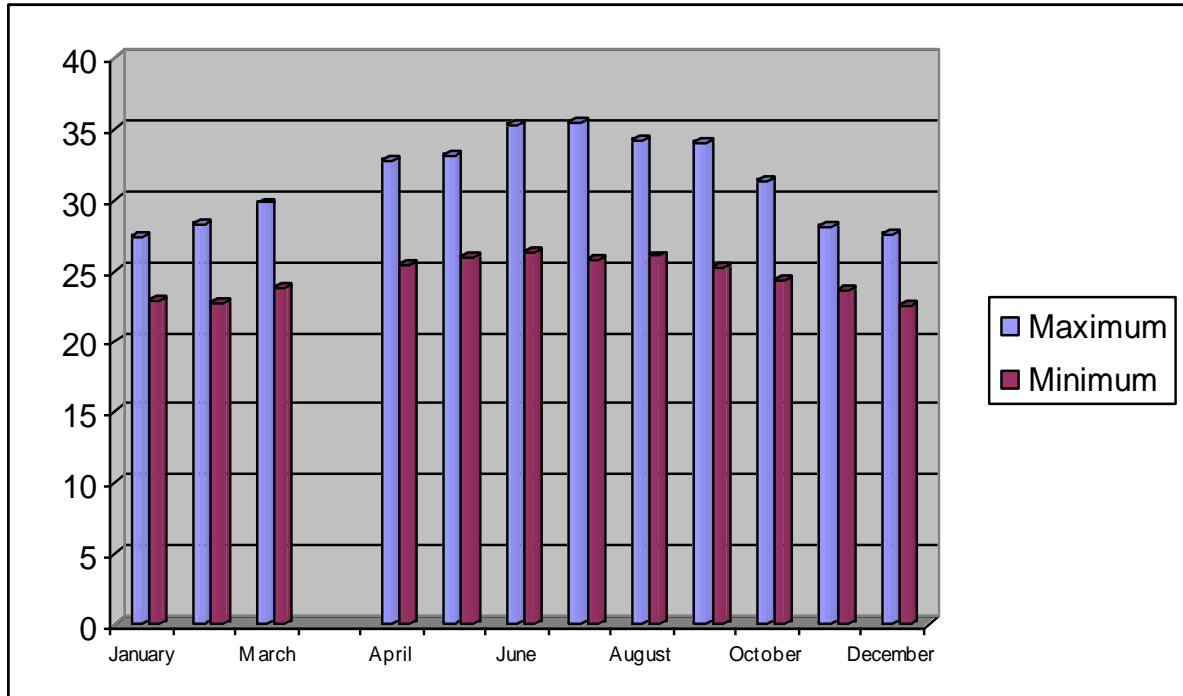
Sl. No	Season	Months	Rainfall	
			Normal (mm)	Number of Rainy days
1	Winter	January and February	67.4	5
2	Summer	March, April and May	122.6	11
3	South West Monsoon	June, July, August and September	135.4	12
4	North East Monsoon	October, November and December	501.6	34
Total			827.0	62

ANNEXURE IV (a & b)

Monthly Average Temperature and Relative Humidity of Ramanathapuram District**IV (a) – Table**

Month	Temperature °C		Relative Humidity %
	Minimum	Maximum	
January	27.45	22.80	79.36
February	28.33	22.69	77.06
March	29.8	23.8	76.83
April	32.8	25.32	80.94
May	33.20	25.89	51.48
June	35.34	26.30	47.51
July	35.55	25.78	61.51
August	34.28	26.03	60.84
September	34.04	25.15	68.42
October	31.41	24.24	65.05
November	28.08	23.58	52.26
December	27.53	22.44	76.40

IV (b) - Graph – II : Monthly Average Temperature



ANNEXURE V

FLORA OF SAKKARAKOTTAI BIRD SANCTUARY

S. No	Family	Species	Tamil Name	IUCN Status
1	Amaranthaceae	<i>Achyranthes aspera</i> L.	Nayurivi	Not Evaluated
2	Arecaceae	<i>Borassus flabellifer</i> L.	Panai	Endangered
3	Asclepiadaceae	<i>Calotropis gigantea</i> (L.) R.Br.	Erukku	Not Evaluated
4	Caesalpiniaceae	<i>Senna auriculata</i> (L.) Roxb.	Avaram, Avaarai	Not Evaluated
5	Caesalpiniaceae	<i>Tamarindus indica</i> L.	Puliya maram	Least Concern
6	Capparidaceae	<i>Cleome viscosa</i> L.	Nai kadugu, Nai vaelai	Not Evaluated
7	Combretaceae	<i>Terminalia catappa</i> L.	Natvadumai, Naattu Badaam	Least Concern
8	Convolvulaceae	<i>Ipomoea carnea</i> Jacq.	Neivelikatamanakku	Not Evaluated
9	Cyperaceae	<i>Cyperus arenarius</i> Retz.	Nagarmotha	Least Concern
10	Euphorbiaceae	<i>Croton bonplandianum</i> Baill.	Rail poondu	Not Evaluated
11	Euphorbiaceae	<i>Phyllanthus reticulatus</i> Poir.	Inki pazham	Least Concern
12	Euphorbiaceae	<i>Euphorbia hirta</i> L.	Ammanpacharisi	Not Evaluated
13	Euphorbiaceae	<i>Tragia involucrata</i> L.	Chenthatti, Kaanjori	Not Evaluated
14	Euphorbiaceae	<i>Phyllanthus amarus</i> Schum. & Thonn.	Kizha-nelli	Not Evaluated
15	Euphorbiaceae	<i>Chrozophora rotleri</i> (Geiseler) Juss.	Suruavarti	Not Evaluated
16	Fabaceae	<i>Alysicarpus monilifer</i> (L.) DC.	Kasu kodi	Not Evaluated
17	Fabaceae	<i>Tephrosia purpurea</i> (L.) Pers.	Kozhinji, Kollukaai vaelai	Not Evaluated
18	Fabaceae	<i>Pongamia pinnata</i> (L.) Pierre	Punga maram	Least Concern
19	Malvaceae	<i>Abutilon indicum</i> (L.) Sweet	Thuthi, Nalla thuthi	Not Evaluated
20	Meliaceae	<i>Azadirachta indica</i> A.	Vaambu, Vaepam	Least Concern

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

		Juss.		
21	Mimosaceae	<i>Prosopis juliflora</i> (Sw.) Dc.	Seemakkaruvai	Not Evaluated
22	Mimosaceae	<i>Acacia leucophloea</i> (Roxb.) Willd.	Velvelam	Least Concern
23	Mimosaceae	<i>Acacia nilotica</i> (L.) Willd. ex Del.	Karuvelam	Least Concern
24	Mimosaceae	<i>Acacia planifrons</i> Wight & Arn.	Kodaivelam, Udai maram	Not Evaluated
25	Molluginaceae	<i>Glinus oppositifolius</i> (L.) A. DC.	Thuraa Poondur	Least Concern
26	Nyctaginaceae	<i>Boerhavia diffusa</i> L.	Mookarattai	Not Evaluated
27	Poaceae	<i>Eragrostis viscosa</i> (Retz.) Trin.	Iragu Kadhal Pul	Not Evaluated
28	Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	Arugam pullu	Not Evaluated
29	Poaceae	<i>Perotis indica</i> (L.) Kuntze	Narival pullu	Not Evaluated
30	Rubiaceae	<i>Morinda pubescens</i> J.E. Smith	Manjanatti	Not Evaluated
31	Scrophulariaceae	<i>Scoparia dulcis</i> L.	Sarakkotthini	Not Evaluated
32	Solanaceae	<i>Datura innoxia</i> Mill.	Oomatthai	Not Evaluated

ANNEXURE VI**CHECKLIST OF BIRDS IN SAKKARAKOTTAI SANCTUARY**

Common name	Scientific name	Conservation Status	Status in Sanctuary	Migratory Status
Grebes	Podicipedidae			
Little Grebe	<i>Tachybaptus ruficollis</i>	Least Concern	C	R, B
Pelicans	Pelecanidae			
Spot-billed Pelican	<i>Pelecanus philippensis</i>	Near Threatened	C	R,B
Cormorants	Phalacrocoracidae			
Little Cormorant	<i>Microcarbo niger</i>	Least Concern	C	R,B
Great Cormorant	<i>Phalacrocorax carbo</i>	Least Concern		
Darters	Anhingidae			
Oriental Darter	<i>Anhinga melanogaster</i>	Near Threatened	U	R,B
Hérons, Egrets & Bitterns	Ardeidae			
Little Egret	<i>Egretta garzetta</i>	Least Concern	C	R,B
Grey Heron	<i>Ardea cinerea</i>	Least Concern	C	R,B
Purple Heron	<i>Ardea purpurea</i>	Least Concern	U	R
Great Egret	<i>Ardea alba</i>	Least Concern	U	R,B # M
Intermediate Egret	<i>Ardea intermedia</i>	Least Concern	U	R,B
Cattle Egret	<i>Bubulcus ibis</i>	Least Concern	C	R,B
Indian Pond-Heron	<i>Ardeola grayii</i>	Least Concern	C	R,B
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	Least Concern	C	R,B
Yellow Bittern	<i>Ixobrychus sinensis</i>	Least Concern	R	R
Storks	Ciconiidae			
Painted Stork	<i>Mycteria leucocephala</i>	Near Threatened	C	R,B
Asian Open bil	<i>Anastomus oscitans</i>	Least Concern	C	R,B
Ibises & Spoonbills	Threskiornithidae			

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 To 2032 – 2033)

Black-headed Ibis	<i>Threskiornis melanocephalus</i>	Near Threatened	C	R,B
Glossy Ibis	<i>Plegadis falcinellus</i>	Least Concern	U	R,M
Eurasian Spoonbill	<i>Platalea leucorodia</i>	Least Concern	C	R
Geese & Ducks	Anatidae			
Northern Pintail	<i>Anas acuta</i>	Least Concern	C	M
Green-Winged Teal	<i>Anas crecca</i>	Least Concern	U	M
Garganey	<i>Spatula querquedula</i>	Least Concern	C	M
Hawks, Eagles, Buzzards, Vultures, Kites, Harriers	Accipitridae			
Black-winged Kite	<i>Elanus caeruleus</i>	Least Concern	U	R,B
Black Kite	<i>Milvus migrans</i>	Least Concern	U	R,B
Brahminy Kite	<i>Haliastur indus</i>	Least Concern	U	R,B
Pallid Harrier	<i>Circus macrourus</i>	Near Threatened	U	M
Pied Harrier	<i>Circus melanoleucos</i>	Least Concern	U	M
Shikra	<i>Accipiter badius</i>	Least Concern	C	R,B
Falcons	Falconidae			
Eurasian Kestrel	<i>Falco tinnunculus</i>	Least Concern	U	M
Pheasants, Partridges, Quails	Phasianidae			
Grey Francolin	<i>Ortygornis pondicerianus</i>	Least Concern	M	R,B
Indian Peafowl	<i>Pavo cristatus</i>	Least Concern	C	R,B
Rails, Crakes, Moorhens, Coots	Rallidae			
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Least Concern	C	R,B
Eurasian Coot	<i>Fulica atra</i>	Least Concern	U	R
Lapwings	Charadriidae	Least Concern		
Red-wattled Lapwing	<i>Vanellus indicus</i>	Least Concern	C	R,B

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

Sandpipers, Stints, Snipes, Godwits & Curlews	Scolopacidae			
Common Snipe	<i>Gallinago gallinago</i>	Least Concern	U	M
Common Greenshank	<i>Tringa nebularia</i>	Least Concern	R	M
Wood Sandpiper	<i>Tringa glareola</i>	Least Concern	U	M
Green Sandpiper	<i>Tringa ochropus</i>	Least Concern	U	R
Little Stint	<i>Calidris minuta</i>	Least Concern	U	M
Ruff	<i>Calidris pugnax</i>	Least Concern	U	M
Stilts	Recurvirostridae			
Black-winged Stilt	<i>Himantopus himantopus</i>	Least Concern	C	R #M
Gulls & Terns	Laridae			
Whiskered Tern	<i>Chlidonias hybridus</i>	Least Concern	U	M
Pigeons & Doves	Columbidae			
Rock Pigeon	<i>Columba livia</i>	Least Concern	C	R,B
Laughing Dove	<i>Spilopelia senegalensis</i>	Least Concern	C	R,B
Spotted Dove	<i>Spilopelia chinensis</i>	Least Concern	C	R,B
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	Least Concern	C	R,B
Parakeets	Psittacidae			
Rose-ringed Parakeet	<i>Psittacula krameri</i>	Least Concern	C	R,B
Cuckoos, Malkohas & Coucals	Cuculidae			
Pied Cuckoo	<i>Clamator jacobinus</i>	Least Concern	U	R,B
Brainfever Bird	<i>Hierococcyx varius</i>	Least Concern	C	R,B
Grey bellied cuckoo	<i>Cacomantis passerinus</i>	Least Concern	U	P
Asian Koel	<i>Eudynamys scolopacea</i>	Least Concern	C	R,B
Green-billed Malkoha	<i>Phaenicophaeus viridirostris</i>	Least Concern	U	R,B

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

Greater Coucal	<i>Centropus sinensis</i>	Least Concern	C	R,B
Barn Owls	Tytonidae			
Barn Owl	<i>Tyto alba</i>	Least Concern	U	R,B
Owls	Strigidae			
Spotted Owlet	<i>Athene brama</i>	Least Concern	C	R,B
Nightjars	Caprimulgidae			
Jungle Nightjar	<i>Caprimulgus indicus</i>	Least Concern	U	R,B
Indian Nightjar	<i>Caprimulgus asiaticus</i>	Least Concern	U	R,B
Swifts	Apodidae			
Asian Palm-Swift	<i>Cypsiurus balasiensis</i>	Least Concern	M	R,B
House Swift	<i>Apus affinis</i>	Least Concern	U	R
Kingfishers	Alcedinidae			
Common Kingfisher	<i>Alcedo atthis</i>	Least Concern	U	R,B
White-breasted Kingfisher	<i>Halcyon smyrnensis</i>	Least Concern	C	R,B
Pied Kingfisher	<i>Ceryle rudis</i>	Least Concern	U	R,B
Bee-eaters	Meropidae			
Asian Green Bee-eater	<i>Merops orientalis</i>	Least Concern	C	R,B
Blue-tailed Bee-eater	<i>Merops philippinus</i>	Least Concern	C	M
Rollers	Coraciidae			
Indian Roller	<i>Coracias benghalensis</i>	Least Concern	C	R,B
Hoopoes	Upupidae			
Common Hoopoe	<i>Upupa epops</i>	Least Concern	C	R,B
Barbets	Capitonidae			
Brown-headed Barbet	<i>Psilopogon zeylanicus</i>	Least Concern	U	R
Coppersmith Barbet	<i>Megalaima haemacephala</i>	Least Concern	C	R,B
Woodpeckers	Picidae			
Black-rumped	<i>Dinopium benghalense</i>	Least Concern	C	R,B

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

Flameback				
Yellow-crowned woodpecker	<i>Leiopicus mahrattensis</i>	Least Concern	U	R,B
Pittas	Pittidae			
Indian Pitta	<i>Pitta brachyura</i>	Least Concern	C	P
Larks	Alaudidae			
Singing Bush-Lark	<i>Mirafra juvanica</i>	Least Concern	U	R
Ashy-crowned Sparrow-Lark	<i>Eremopterix grisea</i>	Least Concern	C	R
Swallows & Martins	Hirundinidae			
Barn Swallow	<i>Hirundo rustica</i>	Least Concern	C	M
Red-rumped Swallow	<i>Cecropis daurica</i>	Least Concern	U	M
Wagtails & Pipits	Motacillidae			
White-browed wagtail	<i>Motacilla maderaspatensis</i>	Least Concern	U	R
Forest Wagtail	<i>Dendronanthus indicus</i>	Least Concern	C	P
Richard's Pipit	<i>Anthus richardi</i>	Least Concern	C	R
Paddyfield Pipit	<i>Anthus rufulus</i>	Least Concern	C	R,B
Woodshrikes	Campephagidae			
Common Woodshrike	<i>Tephrodornis pondicerianus</i>	Least Concern	U	R
Bulbuls	Pycnonotidae			
Red-vented Bulbul	<i>Pycnonotus cafer</i>	Least Concern	C	R,B
Ioras	Irenidae			
Common Iora	<i>Aegithina tiphia</i>	Least Concern	U	R
Shrikes	Laniidae			
Brown Shrike	<i>Lanius cristatus</i>	Least Concern	C	M #P
Bay-backed Shrike	<i>Lanius vittatus</i>	Least Concern	U	R,B
Thrushes, Robins,	Turdinae			

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

Oriental Magpie-Robin	<i>Copsychus saularis</i>	Least Concern	C	R,B
Indian Robin	<i>Saxicoloides fulicata</i>	Least Concern	C	R,B
Babblers	Timaliinae			
Common Babbler	<i>Turdoides caudatus</i>	Least Concern	U	R,B
Yellow-billed Babbler	<i>Turdoides affinis</i>	Least Concern	C	R,B
Prinias, Warblers	Sylviinae			
Jungle Prinia	<i>Prinia sylvatica</i>	Least Concern	C	R,B
Ashy Prinia	<i>Prinia socialis</i>	Least Concern	C	R,B
Blyth's Reed-Warbler	<i>Acrocephalus dumetorum</i>	Least Concern	M	M
Paddy field Warbler	<i>Acrocephalus Agricola</i>	Least Concern	U	M
Common Tailorbird	<i>Orthotomus sutorius</i>	Least Concern	C	R
Greenish Warbler	<i>Phylloscopus trochiloides</i>	Least Concern	C	P
Cisticola	Sylviinae			
Zitting cisticola	<i>Cisticola juncidis</i>	Least Concern	U	R
Flycatchers	Muscicapinae			
Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	Least Concern	C	M
Brown-breasted Flycatcher	<i>Muscicapa muttui</i>	Least Concern	U	P
Indian Paradise-Flycatcher	<i>Terpsiphone paradisi</i>	Least Concern	C	M
Flowerpeckers	Dicaeidae			
Pale-billed Flowerpecker	<i>Dicaeum erythrorhynchos</i>	Least Concern	C	R
Sunbirds	Nectariniidae			
Purple-rumped Sunbird	<i>Nectarinia zeylonica</i>	Least Concern	C	R
Purple Sunbird	<i>Nectarinia asiatica</i>	Least Concern	C	R

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

Loten's sunbird	<i>Nectarinia lotenia</i>	Least Concern	U	R
Munias (Estrildid Finches)	Estrildidae			
Indian Silverbill	<i>Lonchura malabarica</i>	Least Concern	C	R
Scaly breasted Munia	<i>Lonchura punctulata</i>	Least Concern	U	R
Tricolored Munia	<i>Lonchura malacca</i>	Least Concern	U	R
Sparrows	Passerinae			
House Sparrow	<i>Passer domesticus</i>	Least Concern	C	R
Weavers	Ploceinae			
Baya Weaver	<i>Ploceus philippinus</i>	Least Concern	U	R
Starlings & Mynas	Sturnidae			
Brahminy Starling	<i>Sturnus pagodarum</i>	Least Concern	C	M
Common Myna	<i>Acridotheres tristis</i>	Least Concern	M	R,B
Rosy Starling	<i>Sturnus roseus</i>	Least Concern	A	M
Orioles	Oriolidae			
Eurasian Golden Oriole	<i>Oriolus oriolus</i>	Least Concern	U	M
Drongos	Dicruridae			
Black Drongo	<i>Dicrurus macrocercus</i>	Least Concern	C	R
Ashy Drongo	<i>Dicrurus leucophaeus</i>	Least Concern	C	M
Woodswallows	Artamidae			
Ashy Woodswallow	<i>Artamus fuscus</i>	Least Concern	U	R
Crows, Treepies	Corvidae			
Rufous Treepie	<i>Dendrocitta vagabunda</i>	Least Concern	C	R
House Crow	<i>Corvus splendens</i>	Least Concern	M	R,B
Large-billed Crow	<i>Corvus macrorhynchos</i>	Least Concern	C	R,B

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 To 2032 – 2033)

RB= Resident and breeding, R= Resident but breeding not noticed in this area, SM= Local or short distant migrants, W= Wintering Migrants, C=common. UC=uncommon, Ra= Rare, V=vagrant

Source: Dr. Balachandar, BNHS.

Key: Status in Sanctuary

A: Abundant, M: Most Common, C: Common, U: Uncommon, R: Rare, H: Historical records, V: Vagrant

Status	Near- Threatened	Least-Concerned
Abundant	>1000	>5000
Most-Common	>500	>1000
Common	50-500	100-1000
Un-common	10-50	10-100
Rare	<10	<10

Migratory Status: R: Resident, M: Migratory, P: Passage Migrant, B: Breeding

ANNEXURE – VII

CHECK LIST OF MAMMALS, AMPHIBIANS AND REPTILES IN
SAKKARAKOTTAI BIRD SANCTUARY

S. No.	Common name	Scientific name	IUCN Status
Mammals			
1	Indian Grey Mongoose	<i>Herpestes edwardsii</i>	LC
2	Indian Palm Squirrel	<i>Funambulus palmarum</i>	LC
3	Golden Jackal	<i>Canis aureus</i>	VU
4	Black -naped Hare	<i>Lepus nigricollis</i>	LC
Reptiles			
1	Spotted Indian Gecko	<i>Hemidactylus brookii</i>	LC
2	Garden lizard	<i>Calotes versicolor</i>	LC
3	Green lizard	<i>Calotes calotes</i>	LC
4	Monitor lizard	<i>Varanus bengalensis</i>	NT
5	Keeled Indian Mabuya	<i>Eutrophis carinata</i>	LC
6	Olive Keelback water snake	<i>Atretium schistosum</i>	LC
7	Checkered Keelback	<i>Xenochrophis piscator</i>	LC
8	Long Nosed Tree Snake	<i>Ahaetulla nasuta</i>	LC
9	Indian Cobra	<i>Naja naja</i>	LC
Amphibians			
1	Common Indian Toad	<i>Duttaphrynus melanostictus</i>	LC

*NT – NEAR THRETNED

*VU – VULNERABLE

* LC – LEAST CONCERN

Annexure VIII

**Minutes of Meeting and report of meeting conducted by forest staff with local villagers
around the Sakkarakottai Bird Sanctuary**

**Public consultation for finalization of Sakkarakottai
Bird Sanctuary Management Plan**

Consultation with people residing in vicinity of the sanctuary is conducted. The demands and requirements of the local peoples are incorporated in the management plan under eco-development component. The local people expressed that having healthy water region will be beneficial for villagers and birds also. The villagers are interested in developing the Bird Sanctuary as eco-tourism spot with advanced facilities such as Audio Visual Interpretation centre, Bird watching instruments etc., apart from that the school students were actively involved in different activities such as Wetland Day Celebration, Bird census, Forest day celebration, Environment day celebration, etc,. The school infrastructure also be developed through support of Bird Sanctuary Authority under Eco-development component. Thus the requirement of the villagers and other stakeholders taken into consultation. Some of the photographic documentation shown below.



உதவி வனப்பாதுகாவலர் (Assisted by,
வன உயிரினச்சரகம், இராமநாதபுரம். 23

Annexure IX

Eco-sensitivity zone gazette of Sakkarakottai Bird Sancturay

[भाग II—खण्ड 3(ii)]

भारत का राजपत्र : असाधारण

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उपाबंध V

की गई कार्रवाई की रिपोर्ट का रूप विधानः

1. बैठकों की संख्या और तारीख।
2. बैठकों का कार्यवृत्त: (कृपया मुख्य उल्लेखनीय बिंदुओं का उल्लेख करें। बैठक के कार्यवृत्त को एक पृथक् उपाबंध में उपाबंध करें)।
3. आंचलिक महायोजना की तैयारी की प्रगति जिसके अंतर्गत पर्यटन महायोजना भी है।
4. भू-अभिलेख में सदृश्य वृष्टियों के सुधार के लिए व्यौहार किए गए मामलों का सारांश (पारिस्थितिकी संवेदी जोन वार)। (द्वारे उपाबंध के रूप में संलग्न किए जाएं)।
5. पर्यावरण समाचात निर्धारण अधिसूचना, 2006 के अधीन आने वाले क्रियाकलापों की संवीक्षा के मामलों का सारांश। (द्वारे एक पृथक् उपाबंध के रूप में संलग्न किए जाएं)।
6. पर्यावरण समाचात निर्धारण अधिसूचना, 2006 के अधीन न आने वाली गतिविधियों की संवीक्षा के मामलों का सारांश। (द्वारे एक पृथक् उपाबंध के रूप में संलग्न किए जाएं)।
7. पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 19 के अधीन दर्ज की गई शिकायतों का सारांश।
8. कोई अन्य महत्वपूर्ण विषय।

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 10th December, 2019

S.O. 4440(E).—WHEREAS, a draft notification was published in the Gazette of India, Extraordinary, *vide* notification of the Government of India in the Ministry of Environment, Forest and Climate Change number S.O. 3362(E), dated the 9th July, 2018, inviting objections and suggestions from all persons likely to be affected thereby within the period of sixty days from the date on which copies of the Gazette containing the said notification were made available to the public;

AND WHEREAS, copies of the Gazette containing the said draft notification were made available to the public on the 9th July, 2018;

AND WHEREAS, no objections and suggestions were received from persons and stakeholders in response to the draft notification;

AND WHEREAS, the Sakkarakottai Bird Sanctuary otherwise known as "Sakkarakottai Kanmoi" is located in Ramanathapuram taluk of Ramanathapuram district of southern Tamil Nadu. It is a part of Sakkarakottai, Rajasuriyamada and Achadipirambu revenue villages. The Sanctuary is situated about 2 kilometres distance from Ramnad main town. It is an important habitat for several species of migratory, resident birds and plants. The Sakkarakottai Bird Sanctuary lies between 09°21'8" N latitude and 078°48'50" E longitude in the Ramanathapuram District of Tamil Nadu and extends over an area of 2,30,495 square kilometres (230,495 ha). Sakkarakottai was declared as Bird Sanctuary *vide* G.O. Ms. No.114, E&F (FR.5) dated the 17 April, 2012 and notified as a Bird Sanctuary within the meaning and scope of sub-section (1) of 18 of Wildlife (Protection) Act, 1972;

AND WHEREAS, the Sakkarakottai Bird Sanctuary has high richness of nearly threatened species such as pelican, painted stork, eurasian spoon bill, white ibis, darter, flamingo and water birds such as common coot, pin tail, garganey, egrets, cormorants, black winged stilt, king fisher, common myna, brahmyn kile, spotted owl, etc. The area is an important and unique habitat known for varied avian fauna which provide an ecologically sustainable habitat for more than 42 bird species. Many of the different varieties of migratory birds arrive from various parts of countries for feeding purpose. About 5000 birds belonging to 30 species have been listed during the season and the important birds include white ibis, black ibis, open-billed stork, egrets, mynas, teals, ducks, darters, herons, pelicans, etc.;

AND WHEREAS, the wetland is irregular in depth and retains water for 3 to 5 months, if rain is normal. Envisaging successful management measures will attract more breeding species and wintering species to enhance the diversity which in turn will attract more tourists, birdwatchers and students. The best time to visit the Sanctuary for bird watching is November-January when bird population and species diversity is at the highest. The Sanctuary is basically an irrigation tank that is used for storing water for agriculture recharged by the northeast monsoons from October till January. The tank remains completely dry from March to August;

AND WHEREAS, as the Sanctuary is basically an irrigation tank, there is no natural forest within the Sanctuary. Babul (*Acacia nilotica*) plantations were raised by the Forest Department. The other major flora in the tank bunds and foreshore are Nayurivi (*Achyranthes aspera* L.), Panai (*Borassus flabellifer* L.), Erukku (*Calotropis gigantea* (L.) R.Br.), Avaram, Avarai (*Senna auriculata* (L.) Roxb.), Puliya maram (*Tamarindus indica* L.), Nai kadugu, Nai vaelai (*Cleome viscosa* L.), etc;

AND WHEREAS, the Sanctuary being a irrigation tank has very less faunal species (except Avifauna) which include Indian Grey Mongoose (*Herpessus edwardsii*), Indian palm squirrel (*Funambulus palmarum*), jackal (*Canis aureus*), bandicoot rat (*Bandicota bengalensis*), etc. The Sanctuary has diversity of birds, butterflies, insects, reptiles and amphibians. Example of birds are spot-billed pelican (*Pelecanus philippensis*), great cormorant (*Phalacrocorax carbo*), darter (*Anhinga melanogaster*), large egret (*Casmerodius albus*), etc; examples of reptiles are house gecko (*Hemidactylus frenatus*), spotted Indian gecko (*Hemidactylus brookii*), garden lizard (*Calotes versicolor*), green lizard (*Calotes calotes*), monitor lizard (*Varanus bengalensis*), common Indian skink (*Europhis carinata*), etc; examples of amphibians are common Indian toad (*Duttaphrynus melanostictus*), ornate narrow mouthed frog (*Microhyla ornate*), common skittering frog (*Euphlyctis cyanophlyctis*), etc;

AND WHEREAS, the Sanctuary has rare, endangered and threatened species. Examples of rare species are great cormorant (*Phalacrocorax carbo*), purple heron (*Ardea cinerea*), comb duck (*Sarkidiornis melanotos*), northern shoveller (*Anas clypeata*), common teal (*Abas crecca*), common redshank (*Tringa tetanus*) and common greenshank (*Tringa nebularia*). Threatened species recorded in the Sanctuary include spot-billed pelican (*Pelecanus philippensis*) and painted stork (*Mycteria leucocephala*);

WHEREAS, Sakkarakottai, Rajsuriyamadai, Vannigudi, Palkarai and Achadiparambu are the only villages located in the vicinity of the Sanctuary and are under the jurisdiction of Sakkarakottai Panchayat. There are 2559 households in the three villages and nearly half of the total households were observed to be below poverty line. In these villages, the total human population is 9303 and corresponding cattle population including cows, Bull, goats and sheep comes to 827. Most of the people depend upon Rain fed agriculture while the rest earn their livelihood as daily wage labourers. The landscape is mainly agrarian and the economy of the village is primarily dependent on agriculture. Livestock rearing such as goats, sheep, cow and poultry also supports the economy of the villages. Few villagers are also engaged in manufacturing charcoal to supplement their income during the lean season of agriculture;

AND WHEREAS, it is necessary to conserve and protect the area, the extent and boundaries of Sakkarakottai Bird Sanctuary which are specified in paragraph 1 as Eco-sensitive Zone from ecological, environmental and biodiversity point of view and to prohibit industries or class of industries and their operations and processes in the said Eco-sensitive Zone;

NOW, THEREFORE, in exercise of the powers conferred by sub-section (1) and clauses (v) and (xiv) of sub-section (2) and sub-section (3) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) (hereafter in this notification referred to as the Environment Act) read with sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby notifies an area to an extent varying from 0 (zero) kilometre to 2.0 kilometres around the boundary of Sakkarakottai Bird Sanctuary, in Ramanathapuram district in the State of Tamil Nadu as the Sakkarakottai Bird Sanctuary Eco-sensitive Zone (hereafter in this notification referred to as the Eco-sensitive Zone) details of which are as under, namely:-

2. **Extent and boundaries of Eco-sensitive Zone.** – (1) The Eco-sensitive Zone shall be to an extent of 0 (zero) kilometre to 2.0 kilometres around the boundary of Sakkarakottai Bird Sanctuary and the area of the Eco-sensitive Zone is 19.0387 square kilometres. (Zero extent of Eco-sensitive Zone toward eastern side developing site of SIPCOT).
- (2) The boundary description of Sakkarakottai Bird Sanctuary and its Eco-sensitive Zone is appended in **Annexure-I**
- (3) The maps of the Sakkarakottai Bird Sanctuary demarcating Eco-sensitive Zone along with boundary details and latitudes and longitudes are appended as **Annexure-IIA, Annexure-IIB, Annexure-IIC and Annexure-IID**.
- (4) List of geo-coordinates of the boundary of Sakkarakottai Bird Sanctuary and Eco-sensitive Zone are given in **Table A and Table B of Annexure-III**
- (5) The list of villages falling in the Eco-sensitive Zone along with their geo co-ordinates at prominent points is appended as **Annexure-IV**.

2. **Zonal Master Plan for Eco-sensitive Zone.**- (1) The State Government shall, for the purposes of the Eco-sensitive Zone prepare a Zonal Master Plan within a period of two years from the date of publication of this notification in the Official Gazette, in consultation with local people and adhering to the stipulations given in this notification for approval of the competent authority of State.
- (2) The Zonal Master Plan for the Eco-sensitive Zone shall be prepared by the State Government in such manner as is specified in this notification and also in consonance with the relevant Central and State laws and the guidelines issued by the Central Government, if any.
- (3) The Zonal Master Plan shall be prepared in consultation with the following Departments of the State Government, for integrating the ecological and environmental considerations into the said plan:-
 - (i) Environment;
 - (ii) Forest and Wildlife;
 - (iii) Agriculture;
 - (iv) Revenue;
 - (v) Urban Development;
 - (vi) Tourism;
 - (vii) Rural Development;
 - (viii) Irrigation and Flood Control;
 - (ix) Municipal;
 - (x) Panjayati Raj;
 - (xi) Public Works Department;
 - (xii) Highways; and
 - (xiii) Tamil Nadu State Pollution Control Board.
- (4) The Zonal Master Plan shall not impose any restriction on the approved existing land use, infrastructure and activities, unless so specified in this notification and the Zonal Master Plan shall factor in improvement of all infrastructure and activities to be more efficient and eco-friendly.
- (5) The Zonal Master Plan shall provide for restoration of denuded areas, conservation of existing water bodies, management of catchment areas, watershed management, groundwater management, soil and moisture conservation, needs of local community and such other aspects of the ecology and environment that need attention.
- (6) The Zonal Master Plan shall demarcate all the existing worshipping places, villages and urban settlements, types and kinds of forests, agricultural areas, fertile lands, green area, such as, parks and like places, horticultural areas, orchards, lakes and other water bodies with supporting maps giving details of existing and proposed land use features.
- (7) The Zonal Master Plan shall regulate development in Eco-sensitive Zone and adhere to prohibited and regulated activities listed in the Table in paragraph 4 and also ensure and promote eco-friendly development for security of local communities' livelihood.
- (8) The Zonal Master Plan shall be co-terminus with the Regional Development Plan.
- (9) The Zonal Master Plan so approved shall be the reference document for the Monitoring Committee for carrying out its functions of monitoring in accordance with the provisions of this notification.
3. **Measures to be taken by the State Government.**- The State Government shall take the following measures for giving effect to the provisions of this notification, namely:-
 - (1) **Land use.**-(a) Forests, horticulture areas, agricultural areas, parks and open spaces earmarked for recreational purposes in the Eco-sensitive Zone shall not be used or converted into areas for commercial or residential or industrial activities.

Provided that the conversion of agricultural and other lands, for the purpose other than that specified at part (a) above, within the Eco-sensitive Zone may be permitted on the recommendation of the Monitoring Committee, and with the prior approval of the competent authority under Regional Town Planning Act and other rules and regulations of Central Government or State Government as applicable and *vide* provisions of this Notification, to meet the residential needs of the local residents and for activities such as:-

- (i) widening and strengthening of existing roads and construction of new roads;
- (ii) construction and renovation of infrastructure and civic amenities;
- (iii) small scale industries not causing pollution;
- (iv) cottage industries including village industries; convenience stores and local amenities supporting eco-tourism including home stay; and
- (v) promoted activities given under paragraph 4:

Provided further that no use of tribal land shall be permitted for commercial and industrial development activities without the prior approval of the competent authority under Regional Town Planning Act and other rules and regulations of the State Government and without compliance of the provisions of article 244 of the Constitution or the law for the time being in force, including the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (2 of 2007):

Provided also that any error appearing in the land records within the Eco-sensitive Zone shall be corrected by the State Government, after obtaining the views of Monitoring Committee, once in each case and the correction of said error shall be intimated to the Central Government in the Ministry of Environment, Forest and Climate Change:

Provided also that the correction of error shall not include change of land use in any case except as provided under this sub-paragraph.

- (b) Efforts shall be made to reforest the unused or unproductive agricultural areas with afforestation and habitat restoration activities.
- (2) **Natural water bodies.**-The catchment areas of all natural springs shall be identified and plans for their conservation and rejuvenation shall be incorporated in the Zonal Master Plan and the guidelines shall be drawn up by the State Government in such a manner as to prohibit development activities at or near these areas which are detrimental to such areas.
- (3) **Tourism or Eco-tourism.**- (a) All new eco-tourism activities or expansion of existing tourism activities within the Eco-sensitive Zone shall be as per the Tourism Master Plan for the Eco-sensitive Zone.
- (b) The Eco-Tourism Master Plan shall be prepared by the State Department of Tourism in consultation with State Departments of Environment and Forests.
- (c) The Tourism Master Plan shall form a component of the Zonal Master Plan.
- (d) The Tourism Master Plan shall be drawn based on the study of carrying capacity of the Eco-sensitive Zone.
- (e) The activities of eco-tourism shall be regulated as under, namely:-
 - (i) new construction of hotels and resorts shall not be allowed within one kilometre from the boundary of the protected area or upto the extent of the Eco-sensitive Zone whichever is nearer:

Provided that beyond the distance of one kilometre from the boundary of the protected area till the extent of the Eco-sensitive Zone, the establishment of new hotels and resorts shall be allowed only in pre-defined and designated areas for eco-tourism facilities as per Tourism Master Plan;
 - (ii) all new tourism activities or expansion of existing tourism activities within the Eco-sensitive Zone shall be in accordance with the guidelines issued by the Central Government in the Ministry of Environment, Forest and Climate Change and the eco-tourism guidelines issued by National Tiger Conservation Authority (as amended from time to time) with emphasis on eco-tourism, eco-education and eco-development;
 - (iii) until the Zonal Master Plan is approved, development for tourism and expansion of existing tourism activities shall be permitted by the concerned regulatory authorities based on the actual site specific scrutiny and recommendation of the Monitoring Committee and no new hotel, resort or commercial establishment construction shall be permitted within Eco-sensitive Zone area.
- (4) **Natural heritage.**- All sites of valuable natural heritage in the Eco-sensitive Zone, such as the gene pool reserve areas, rock formations, waterfalls, springs, gorges, groves, caves, points, walks, rides, cliffs, etc. shall be identified and a heritage conservation plan shall be drawn up for their preservation and conservation as a part of the Zonal Master Plan.
- (5) **Man-made heritage sites.**- Buildings, structures, artefacts, areas and precincts of historical, architectural, aesthetic, and cultural significance shall be identified in the Eco-sensitive Zone and heritage conservation plan for their conservation shall be prepared as part of the Zonal Master Plan.

- (6) **Noise pollution.** - Prevention and control of noise pollution in the Eco-sensitive Zone shall be complied in accordance with the provisions of the Noise Pollution (Regulation and Control) Rules, 2000 under the Environment Act.
- (7) **Air pollution.** - Prevention and control of air pollution in the Eco-sensitive Zone shall be complied in accordance with the provisions of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and the rules made thereunder.
- (8) **Discharge of effluents.** - Discharge of treated effluent in Eco-sensitive Zone shall be in accordance with the provisions of the General Standards for Discharge of Environmental Pollutants covered under the Environment Act and the rules made thereunder or standards stipulated by State Government whichever is more stringent.
- (9) **Solid wastes.** - Disposal and Management of solid wastes shall be as under:-
 - (a) the solid waste disposal and management in the Eco-sensitive Zone shall be carried out in accordance with the Solid Waste Management Rules, 2016, published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* notification number S.O. 1357 (E), dated the 8th April, 2016; the inorganic material may be disposed in an environmental acceptable manner at site identified outside the Eco-sensitive Zone;
 - (b) safe and Environmentally Sound Management (ESM) of Solid wastes in conformity with the existing rules and regulations using identified technologies may be allowed within Eco-sensitive Zone.
- (10) **Bio-Medical Waste.** - Bio Medical Waste Management shall be as under:-
 - (a) The Bio-Medical Waste disposal in the Eco-sensitive Zone shall be carried out in accordance with the Bio-Medical Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* notification number G.S.R. 343 (E), dated the 28th March, 2016.
 - (b) Safe and Environmentally Sound Management of Bio-Medical Wastes in conformity with the existing rules and regulations using identified technologies may be allowed within the Eco-sensitive Zone.
- (11) **Plastic waste management.** - The plastic waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the Plastic Waste Management Rules, 2016, published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* notification number G.S.R. 340(E), dated the 18th March, 2016, as amended from time to time.
- (12) **Construction and demolition waste management.** - The construction and demolition waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the Construction and Demolition Waste Management Rules, 2016 published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* notification number G.S.R. 317(E), dated the 29th March, 2016, as amended from time to time.
- (13) **E-waste.** - The E - waste management in the Eco-sensitive Zone shall be carried out as per the provisions of the E-Waste Management Rules, 2016, published by the Government of India in the Ministry of Environment, Forest and Climate Change, as amended from time to time.
- (14) **Vehicular traffic.** - The vehicular movement of traffic shall be regulated in a habitat friendly manner and specific provisions in this regard shall be incorporated in the Zonal Master Plan and till such time as the Zonal Master plan is prepared and approved by the Competent Authority in the State Government, the Monitoring Committee shall monitor compliance of vehicular movement under the relevant Acts and the rules and regulations made thereunder.
- (15) **Vehicular pollution.** - Prevention and control of vehicular pollution shall be in compliance with applicable laws and efforts shall be made for use of cleaner fuels.
- (16) **Industrial units.** - (i) On or after the publication of this notification in the Official Gazette, no new polluting industries shall be permitted to be set up within the Eco-sensitive Zone.
 (ii) Only non-polluting industries shall be allowed within Eco-sensitive Zone as per the classification of Industries in the guidelines issued by the Central Pollution Control Board in February, 2016, unless so specified in this notification, and in addition, the non-polluting cottage industries shall be promoted.
- (17) **Protection of hill slopes.** - The protection of hill slopes shall be as under:-
 - (a) the Zonal Master Plan shall indicate areas on hill slopes where no construction shall be permitted;
 - (b) construction shall not be permitted on existing steep hill slopes or slopes with a high degree of erosion.

4. **List of activities prohibited or to be regulated within Eco-sensitive Zone.**- All activities in the Eco-sensitive Zone shall be governed by the provisions of the Environment Act and the rules made thereunder including the Coastal Regulation Zone, 2011 and the Environmental Impact Assessment Notification, 2006 and other applicable laws including the Forest (Conservation) Act, 1980 (69 of 1980), the Indian Forest Act, 1927 (16 of 1927), the Wildlife (Protection) Act, 1972 (53 of 1972), and amendments made thereto and be regulated in the manner specified in the Table below, namely:-

TABLE

S. No. (1)	Activity (2)	Description (3)
A. Prohibited Activities		
1.	Commercial mining, stone quarrying and crushing units.	(a) All new and existing mining (minor and major minerals), stone quarrying and crushing units are prohibited with immediate effect except for meeting the domestic needs of bona fide local residents including digging of earth for construction or repair of houses and for manufacture of country tiles or bricks for housing and for personal consumption; (b) The mining operations shall be carried out in accordance with the order of the Hon'ble Supreme Court dated the 4 th August, 2006 in the matter of T.N. Godavarman Thirumulpad Vs. UOI in W.P.(C) No.202 of 1995 and dated the 21 st April, 2014 in the matter of Goa Foundation Vs. UOI in W.P.(C) No.435 of 2012.
2.	Setting of industries causing pollution (Water, Air, Soil, Noise, etc.).	New industries and expansion of existing polluting industries in the Eco-sensitive Zone shall not be permitted; Provided that non-polluting industries shall be allowed within Eco-sensitive Zone as per classification of Industries in the guidelines issued by the Central Pollution Control Board in February, 2016, unless otherwise specified in this notification and in addition the non-polluting cottage industries shall be promoted.
3.	Establishment of major hydro-electric project.	Prohibited (except as otherwise provided) as per the applicable laws.
4.	Use or production or processing of any hazardous substances.	Prohibited (except as otherwise provided) as per the applicable laws.
5.	Discharge of untreated effluents in natural water bodies or land area.	Prohibited (except as otherwise provided) as per the applicable laws.
6.	Setting up of new saw mills.	New or expansion of existing saw mills shall not be permitted within the Eco-sensitive Zone.
7.	Setting up of brick kilns.	Prohibited (except as otherwise provided) as per the applicable laws.
B. Regulated Activities		
8.	Commercial establishment of hotels and resorts.	No new commercial hotels and resorts shall be permitted within one kilometer of the boundary of the protected area or upto the extent of Eco-sensitive Zone, whichever is nearer, except for small temporary structures for eco-tourism activities; Provided that, beyond one kilometer from the boundary of the protected area or upto the extent of Eco-sensitive Zone whichever is nearer, all new tourist activities or expansion of existing activities shall be in conformity with the Tourism Master Plan and guidelines as applicable.

9.	Construction activities.	<p>(a) New commercial construction of any kind shall not be permitted within one kilometer from the boundary of the protected area or upto extent of the Eco-sensitive Zone, whichever is nearer.</p> <p>Provided that, local people shall be permitted to undertake construction in their land for their use including the activities mentioned in sub-paragraph (1) of paragraph 3 as per building bye-laws to meet the residential needs of the local residents.</p> <p>Provided further that the construction activity related to small scale industries not causing pollution shall be regulated and kept at the minimum, with the prior permission from the competent authority as per applicable rules and regulations, if any.</p> <p>(b) Beyond one kilometer it shall be regulated as per the Zonal Master Plan.</p>
10.	Small scale non polluting industries.	Non polluting industries as per classification of industries issued by the Central Pollution Control Board in February, 2016 and non-hazardous, small-scale and service industry, agriculture, floriculture, horticulture or agro-based industry producing products from indigenous materials from the Eco-sensitive Zone shall be permitted by the competent Authority.
11.	Felling of trees.	<p>(a) There shall be no felling of trees in the forest or Government or revenue or private lands without prior permission of the Competent Authority in the State Government.</p> <p>(b) The felling of trees shall be regulated in accordance with the provisions of the concerned Central or State Act and the rules made thereunder.</p>
12.	Collection of Forest produce or Non-Timber Forest produce.	Regulated as per the applicable laws.
13.	Establishment of large-scale commercial livestock and poultry farms by firms, corporate and companies.	Regulated (except as otherwise provided) as per the applicable laws except for meeting local needs.
14.	Erection of electrical and communication towers and laying of cables and other infrastructures.	Regulated under applicable laws (underground cabling may be promoted).
15.	Infrastructure including civic amenities.	Taking measures of mitigation as per the applicable laws, rules and regulations available guidelines.
16.	Widening and strengthening of existing roads and construction of new roads.	Taking measures of mitigation as per the applicable laws, rules and regulation and available guidelines.
17.	Undertaking other activities related to tourism like flying over the Eco-sensitive Zone area by hot air balloon, helicopter, drones, Microlites, etc.	Regulated as per the applicable laws.
18.	Protection of hill slopes and river banks.	Regulated as per the applicable laws.
19.	Movement of vehicular traffic at night.	Regulated for commercial purpose under applicable laws.
20.	Ongoing agriculture and horticulture practices by local communities along with dairies, dairy farming, aquaculture	Permitted as per the applicable laws for use of locals.

	and fisheries.	
21.	Discharge of treated waste water or effluents in natural water bodies or land area.	The discharge of treated waste water or effluents shall be avoided to enter into the water bodies and efforts shall be made for recycle and reuse of treated waste water. Otherwise the discharge of treated waste water or effluent shall be regulated as per the applicable laws.
22.	Commercial extraction of surface and ground water.	Regulated as per the applicable laws.
23.	Open Well, Bore Well, etc. for agriculture or other usage.	Regulated and the activity should be strictly monitored by the appropriate authority.
24.	Solid waste management.	Regulated as per the applicable laws.
25.	Introduction of exotic species.	Regulated as per the applicable laws.
26.	Eco-tourism.	Regulated as per the applicable laws.
27.	Use of polythene bags.	Regulated as per the applicable laws.
28.	Commercial sign boards and hoardings.	Regulated as per the applicable laws.
29.	Use of Fire Crackers.	Regulated as per the applicable laws.
30.	Charcoal Burning.	Regulated as per the applicable laws.
C. Promoted Activities		
31.	Rain water harvesting.	Shall be actively promoted.
32.	Organic farming.	Shall be actively promoted.
33.	Adoption of green technology for all activities.	Shall be actively promoted.
34.	Cottage industries including village artisans, etc.	Shall be actively promoted.
35.	Use of renewable energy and fuels.	Bio-gas, solar light, etc. shall be actively promoted.
36.	Agro-Forestry.	Shall be actively promoted.
37.	Plantation of Horticulture and Herbs.	Shall be actively promoted.
38.	Use of eco-friendly transport.	Shall be actively promoted.
39.	Skill Development.	Shall be actively promoted.
40.	Restoration of degraded land/ forests/ habitat.	Shall be actively promoted.
41.	Environmental awareness.	Shall be actively promoted.

5. Monitoring Committee for Monitoring the Eco-sensitive Zone Notification. For effective monitoring of the provisions of this notification under sub-section (3) of section 3 of the Environment (Protection) Act, 1986, the Central Government hereby constitutes a Monitoring Committee, comprising of the following, namely:-

Sl. No.	Constituent of the Monitoring Committee	Designation
(1)	The District Collector, Ramanathapuram	Chairman, ex officio;
(2)	A representative of non-government organisation working in the field of wildlife conservation to be nominated by the State Government	Member;
(3)	An expert in Biodiversity nominated by the State Government	Member;
(4)	An expert in Ecology and Environment to be nominated by the State Government	Member;

(5)	A representative from State Public Works Department	Member;
(6)	A representative from State Pollution Control Board	Member;
(7)	Wildlife Warden, Gulf of Mannar Marine National Park, Ramanathapuram	Member-Secretary.

6. Terms of reference. – (1) The Monitoring Committee shall monitor the compliance of the provisions of this notification.

- (2) The tenure of the Monitoring committee shall be for three years or till the re-constitution of the new Committee by the State Government and subsequently the Monitoring Committee shall be constituted by the State Government.
- (3) The activities that are covered in the Schedule to the notification of the Government of India in the erstwhile Ministry of Environment and Forests number S.O. 1533 (E), dated the 14th September, 2006, and are falling in the Eco-sensitive Zone, except for the prohibited activities as specified in the Table under paragraph 4 thereof, shall be scrutinised by the Monitoring Committee based on the actual site-specific conditions and referred to the Central Government in the Ministry of Environment, Forest and Climate Change for prior environmental clearances under the provisions of the said notification.
- (4) The activities that are not covered in the Schedule to the notification of the Government of India in the erstwhile Ministry of Environment and Forest number S.O. 1533 (E), dated the 14th September, 2006 and are falling in the Eco-sensitive Zone, except for the prohibited activities as specified in the Table under paragraph 4 thereof, shall be scrutinised by the Monitoring Committee based on the actual site-specific conditions and referred to the concerned regulatory authorities.
- (5) The Member-Secretary of the Monitoring Committee or the concerned Deputy Commissioner(s) shall be competent to file complaints under section 19 of the Environment Act, against any person who contravenes the provisions of this notification.
- (6) The Monitoring Committee may invite representatives or experts from concerned Departments, representatives from industry associations or concerned stakeholders to assist in its deliberations depending on the requirements on issue to issue basis.
- (7) The Monitoring Committee shall submit the annual action taken report of its activities as on the 31st March of every year by the 30th June of that year to the Chief Wildlife Warden in the State as per proforma appended at **Annexure- V**.
- (8) The Central Government in the Ministry of Environment, Forest and Climate Change may give such directions, as it deems fit, to the Monitoring Committee for effective discharge of its functions.

7. The Central Government and State Government may specify additional measures, if any, for giving effect to provisions of this notification.

8. The provisions of this notification shall be subject to the orders, if any passed or to be passed by the Hon'ble Supreme Court of India or the High Court or the National Green Tribunal.

[F. No. 25/11/2018-ESZ]

Dr. SATISH C. GARKOTI, Scientist 'G'

ANNEXURE- I

BOUNDARY DESCRIPTION OF ECOSENSITIVE ZONE OF SAKKARAKOTTAI BIRD SANCTUARY

North	Starts from a junction on Vannan Oorani. Thence the boundary travels in eastern direction along the road which runs south of MSK Nagar and Pasumon Nagar till it reaches a point on Keelakarai – Ramnad highway.
North East	From the interception point on the East Coast Road the boundary travels along the Ramnad – Keelakarai highway in Southern direction along the sanctuary boundary.

East	Thence the boundary travels adjoining to the Keelakarai – Ramnad ECR highway along the sanctuary boundary in southern direction till the interception point of Rajasooraimadai village approach road on the Keelakarai – Ramnad ECR highway.
South East	Thence the boundary travels along the Ramnad – Keelakarai ECR highway till the interception point of Palkarai village approach road on the Keelakarai – Ramnad ECR highway.
South	The boundary travels 1.2 Km.south of Sakkarakottai Kanmoi along the Palkarai village approach road till it reaches Palkarai village.
South West	Thence the boundary proceeds along the bund of Vittanur North Kanmoi till it reaches the southwestern bund of Vannigudi kanmoi.
West	Thence the boundary travels along the bund of Vannigudi kanmoi in southwest direction till the western most tip of Vannigudi Kanmoi. Thence the boundary travels northern direction till it touches the Ekkagudi – Puttendal village road.
North West	Thence the boundary travels in north eastern direction along the southern bund of Puttendal Kanmoi till it touches the start point near Vannan Oorani.

SAKKARAKOTTAI BIRDS SANCTUARY

ANNEXURE-I-(III)(B)

GOOGLE EARTH MAP

1.62 KM

0.97 KM

1.14 KM

1.45 KM

Village

Road

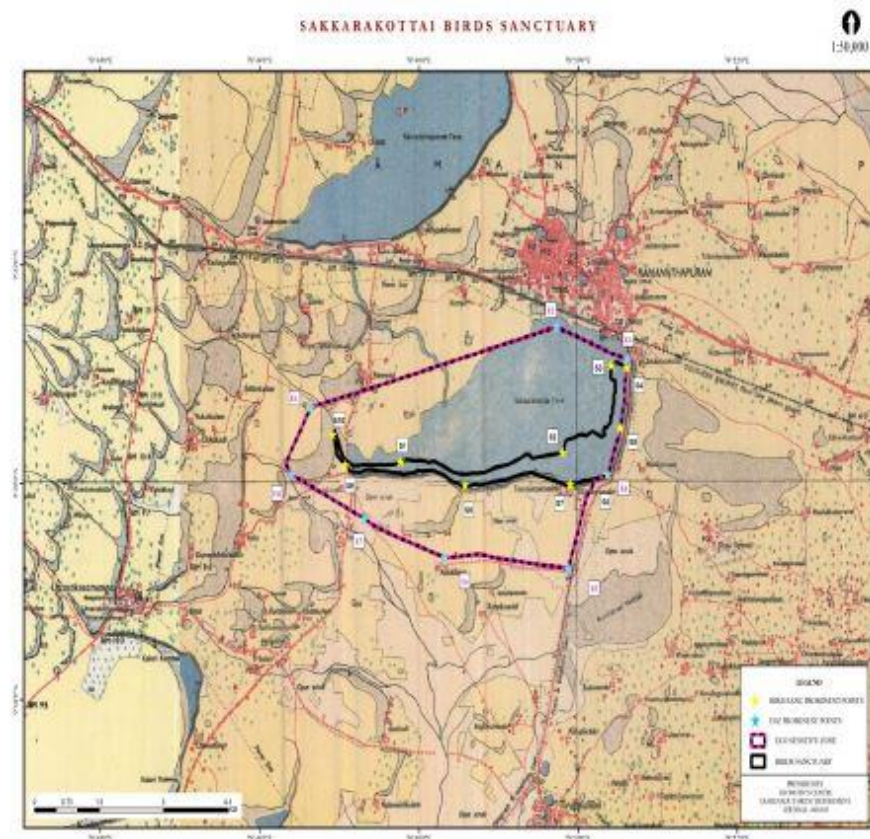
Sanctuary Boundary

Scale: 0 1000 Meters

Google Earth Map

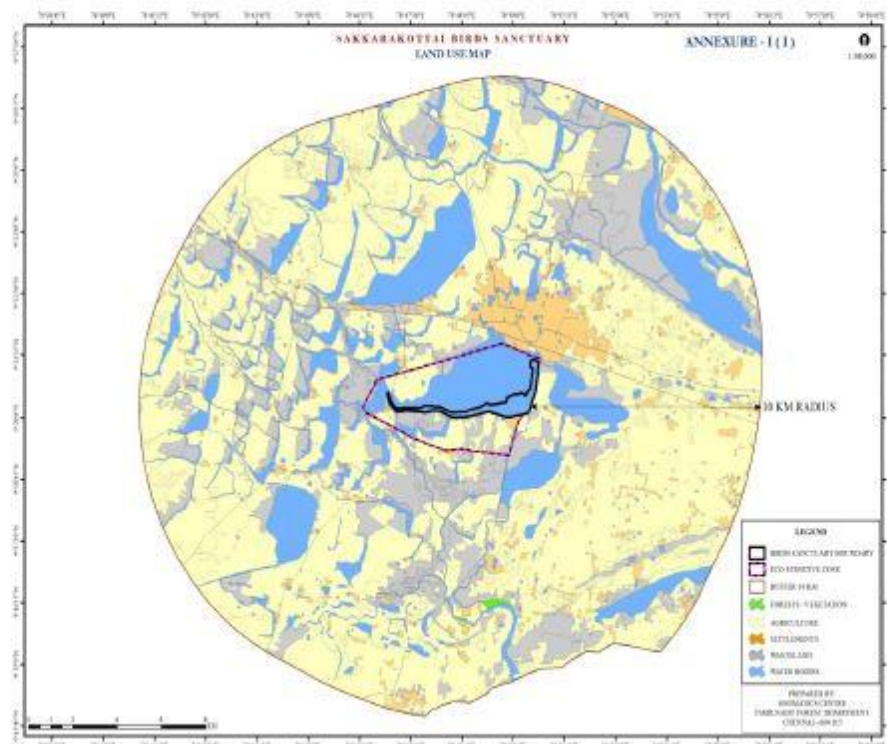
ANNEXURE-IIIb

MAP OF ECO-SENSITIVE ZONE OF SAKKARAKOTTAI BIRD SANCTUARY ALONG WITH LATITUDE AND LONGITUDE OF PROMINENT LOCATIONS ON SURVEY OF INDIA (SOI) TOPOSHEET



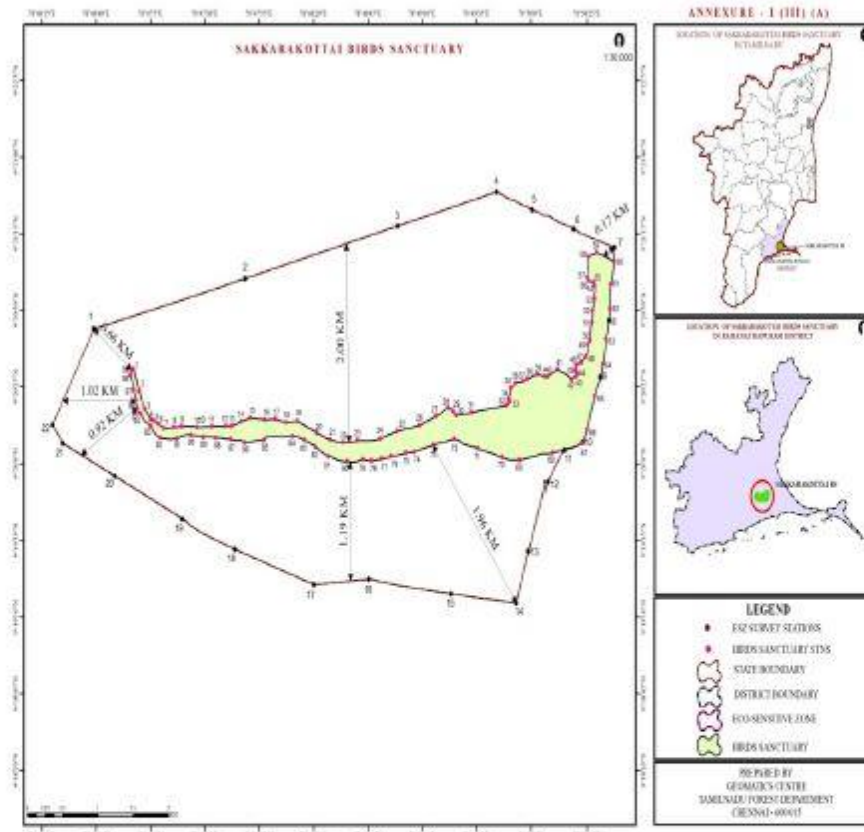
ANNEXURE-III C

MAP SHOWING LANDUSE PATTERN OF ECO-SENSITIVE ZONE OF SAKKARAKOTTAI BIRD
SANCTUARY IN 10 KM BUFFER ALONG WITH LATITUDE AND LONGITUDE OF PROMINENT
LOCATIONS



ANNEXURE-III

**MAP OF ECO-SENSITIVE ZONE OF SAKKARAKOTTAI BIRD SANCTUARY ALONG WITH LATITUDE
AND LONGITUDE OF PROMINENT LOCATIONS**



ANNEXURE-III

**TABLE A: GEO- COORDINATES OF PROMINENT LOCATIONS OF SAKKARAKOTTAI BIRD
SANCTUARY**

S. No.	Identification of prominent points	Location / Direction of Prominent Point	Latitude (N) DMS format	Longitude (E) DMS format
1	1	NW	78°46'57.3276"	9°20'30.7464"
2	2	NW	78°46'59.8512"	9°20'23.7696"
3	3	NW	78°47'2.4504"	9°20'17.988"
4	4	NW	78°47'5.136"	9°20'14.5176"
5	5	NW	78°47'6.6192"	9°20'14.0892"
6	6	NW	78°47'8.6928"	9°20'13.0128"

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 To 2032 – 2033)

[भाग II—खण्ड 3(ii)]

भारत का राजपत्र : असाधारण

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7	7	NW	78°47'11.2128"	9°20'11.5836"
8	8	N	78°47'15.8856"	9°20'11.868"
9	9	N	78°47'19.5252"	9°20'12.1992"
10	10	N	78°47'26.4228"	9°20'11.9724"
11	11	N	78°47'33.3816"	9°20'12.1128"
12	12	N	78°47'39.6744"	9°20'12.228"
13	13	N	78°47'42.3744"	9°20'12.318"
14	14 (S1)	N Northern margin of Sakkarakottai Kanmoi	78°47'46.7448"	9°20'13.7292"
15	15	N	78°47'51.036"	9°20'15.0576"
16	16	N	78°47'57.678"	9°20'14.424"
17	17	N	78°48'2.43"	9°20'14.568"
18	18	N	78°48'7.3908"	9°20'13.506"
19	19	N	78°48'12.7044"	9°20'13.9596"
20	20	N	78°48'21.78"	9°20'10.0608"
21	21	N	78°48'27.63"	9°20'7.8216"
22	22	N	78°48'33.8868"	9°20'6.9972"
23	23	N	78°48'40.3056"	9°20'7.584"
24	24	N	78°48'50.9076"	9°20'8.2536"
25	25	N	78°48'58.6692"	9°20'10.7376"
26	26	N	78°49'8.904"	9°20'12.534"
27	27	N	78°49'16.6404"	9°20'15.648"
28	28	N	78°49'21.9288"	9°20'18.2472"
29	29	N	78°49'24.24"	9°20'17.3184"
30	30	N	78°49'25.7916"	9°20'15.8064"
31	31	N	78°49'32.9268"	9°20'16.746"
32	32 (S2)	N Northern Margin of Sakkarakottai Kanmoi	78°49'49.0152"	9°20'19.0536"
33	33	N	78°49'50.3652"	9°20'20.31"
34	34	N	78°49'50.0124"	9°20'21.138"
35	35	N	78°49'50.898"	9°20'24.72"
36	36	N	78°49'53.1408"	9°20'26.3832"
37	37	N	78°49'56.7084"	9°20'26.9412"
38	38	N	78°49'58.548"	9°20'27.762"
39	39	N	78°50'3.1452"	9°20'29.1336"

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 to 2032 – 2033)

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THE GAZETTE OF INDIA : EXTRAORDINARY

[PART II—SEC. 3(ii)]

40	40	N	78°50'6.8388"	9°20'28.4496"
41	41	NE	78°50'11.5008"	9°20'30.7464"
42	42	NE	78°50'18.0816"	9°20'27.5136"
43	43	NE	78°50'20.2164"	9°20'28.536"
44	44	NE	78°50'20.6304"	9°20'29.5008"
45	45	NE	78°50'19.662"	9°20'30.4044"
46	46	NE	78°50'20.1156"	9°20'32.1432"
47	47	NE	78°50'22.5312"	9°20'32.9532"
48	48	NE	78°50'24.5364"	9°20'35.0052"
49	49	NE	78°50'25.386"	9°20'38.8356"
50	50	NE	78°50'26.4588"	9°20'40.2252"
51	51	NE	78°50'27.3804"	9°20'45.96"
52	52	NE	78°50'27.6"	9°20'49.9344"
53	53	NE	78°50'28.6188"	9°20'53.8044"
54	54	NE	78°50'28.6296"	9°20'58.002"
55	55	NE	78°50'28.1508"	9°20'59.172"
56	56	NE	78°50'25.7568"	9°20'59.784"
57	57	NE	78°50'25.2024"	9°21'0.7812"
58	58 (S3)	NE Northern tip of Sakkarakottai Kanmoi	78°50'25.8504"	9°21'7.4304"
59	59	N	78°50'29.6196"	9°21'8.8848"
60	60 (S4)	NE Northern tip on Sakkarakottai Tank bund along Ramnad - Keelakarai Road	78°50'37.3272"	9°21'5.9004"
61	61	NE	78°50'36.0744"	9°20'58.4988"
62	62	NE	78°50'35.7252"	9°20'50.5104"
63	63	NE	78°50'33.8244"	9°20'40.6068"
64	64 (S5)	E Along the Eastern bund on Ramnad - Keelakarai Road	78°50'32.4456"	9°20'32.3592"
65	65	E	78°50'28.5972"	9°20'22.2792"
66	66	E	78°50'25.0836"	9°20'11.112"
67	67 (S6)	SE South Eastern tip of Sakkarakottai Tank Bund along Ramnad - Keelakarai Road	78°50'22.7292"	9°20'6.7056"
68	68	SE	78°50'9.3336"	9°20'3.6888"
69	69 (S7)	S Southern bund of Sakkarakottai tank	78°49'58.062"	9°20'1.5396"

MANAGEMENT PLAN OF SAKKARAKOTTAI BIRD SANCTUARY (2023 – 2024 To 2032 – 2033)

[भाग II—खण्ड 3(ii)]

भारत का राजपत्र : असाधारण

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70	70	S	78°49'46.7544"	9°20'2.1408"
71	71	S	78°49'35.6988"	9°20'5.1252"
72	72	S	78°49'24.87"	9°20'8.1132"
73	73	S	78°49'15.3408"	9°20'6.18"
74	74	S	78°49'6.3588"	9°20'3.84"
75	75	S	78°49'2.6472"	9°20'3.6528"
76	76	S	78°48'55.9692"	9°20'2.5872"
77	77	S	78°48'51.5268"	9°20'1.662"
78	78	S	78°48'46.854"	9°20'1.1328"
79	79	S	78°48'42.03"	9°20'1.6908"
80	80 (S8)	S Southern Bund of Sakkarakottai Tank towards western portion of Kannoi	78°48'35.5464"	9°20'0.7908"
81	81	S	78°48'26.8956"	9°20'2.4216"
82	82	S	78°48'20.9628"	9°20'5.5248"
83	83	S	78°48'15.7572"	9°20'7.6596"
84	84	S	78°48'10.386"	9°20'8.952"
85	85	S	78°47'57.3036"	9°20'7.6344"
86	86	S	78°47'48.4512"	9°20'6.8136"
87	87	S	78°47'41.9568"	9°20'7.908"
88	88	S	78°47'35.1132"	9°20'8.484"
89	89	S	78°47'29.3532"	9°20'8.7396"
90	90	S	78°47'23.73"	9°20'9.3696"
91	91	SW	78°47'17.2032"	9°20'8.2644"
92	92	SW	78°47'9.4848"	9°20'8.4624"
93	93 (S9)	SW Intersection point of Vannigudi approach road on Ramnad - Kalari Road	78°47'5.1072"	9°20'12.1236"
94	94	SW	78°47'0.51"	9°20'16.1268"
95	95	W	78°46'58.9368"	9°20'18.0276"
96	96	W	78°46'58.2924"	9°20'20.616"
97	97	W	78°46'57.3744"	9°20'24.0108"
98	98 (S10)	NW On Vannigudi Tank Bund	78°46'55.7184"	9°20'28.7808"
99	99	NW	78°46'56.2368"	9°20'30.6384"

TABLE B: GEO-COORDINATES OF PROMINENT LOCATIONS OF ECO-SENSITIVE ZONE

S. No.	Identification of prominent points	Location / Direction of Prominent Point	Latitude (N) DMS format	Longitude (E) DMS format
1	1 (E1)	NW Northwestern tip of Vannigudi Kanmoi	78°46'39.0216"	9°20'44.0628"
2	2	N	78°47'48.6096"	9°21'1.0476"
3	3	N	78°48'58.77"	9°21'17.802"
4	4 (E2)	N Southern tip of Vannan Oorani	78°49'44.4468"	9°21'28.6848"
5	5	N	78°50'0.7584"	9°21'22.878"
6	6	N	78°50'18.9744"	9°21'16.506"
7	7 (E3)	NE North of Sakkarakottai Kanmoi on Ramnad-Keelakarai Road	78°50'37.6044"	9°21'10.098"
8	8	E	78°50'35.4192"	9°20'46.8816"
9	9	E	78°50'31.4052"	9°20'28.3344"
10	10 (E4)	E South Eastern boundary of Sakkarakottai Tank along the Ramnad - Keelakarai Road	78°50'23.0568"	9°20'7.1556"
11	11	E	78°50'14.6832"	9°20'4.4772"
12	12	E	78°50'7.0764"	9°19'54.0984"
13	13	SE	78°49'58.9872"	9°19'31.53"
14	14 (E5)	SE Intersection point of Palkarai approach road on Ramnad - Keelakarai Road	78°49'53.454"	9°19'14.7072"
15	15	S	78°49'23.4444"	9°19'17.6484"
16	16	S	78°48'45.4968"	9°19'22.4328"
17	17 (E6)	S Palkarai Village Road	78°48'20.2176"	9°19'20.658"
18	18	S	78°47'43.9584"	9°19'32.2464"
19	19 (E7)	SW Vittanoor North Kanmoi Bund	78°47'19.5684"	9°19'41.8512"
20	20	SW	78°46'48.396"	9°19'55.6104"
21	21 (E8)	W Vannigudi Kanmoi western bund	78°46'24.564"	9°20'6.5616"
22	22	W	78°46'20.1072"	9°20'12.6348"

ANNEXURE-IV

LIST OF VILLAGES COMING UNDER ECO-SENSITIVE ZONE OF SAKKARAKOTTAI BIRD SANCTUARY ALONG WITH GEO-COORDINATES

SL No	Village Name	Tehsil/ Taluk	District	Latitude (DMS format)	Longitude (DMS format)
1	Rajasooriyamadai	Ramanathapuram	Ramanathapuram	9°19'52.64"	78°50'2.50"
2	Palakarai	Ramanathapuram	Ramanathapuram	9°19'17.74"	78°48'12.21"
3	Vannikudi	Ramanathapuram	Ramanathapuram	9°20'8.49"	78°46'53.18"
4	Achadiparambu	Ramanathapuram	Ramanathapuram	9°19'14.55"	78°48'29.65"

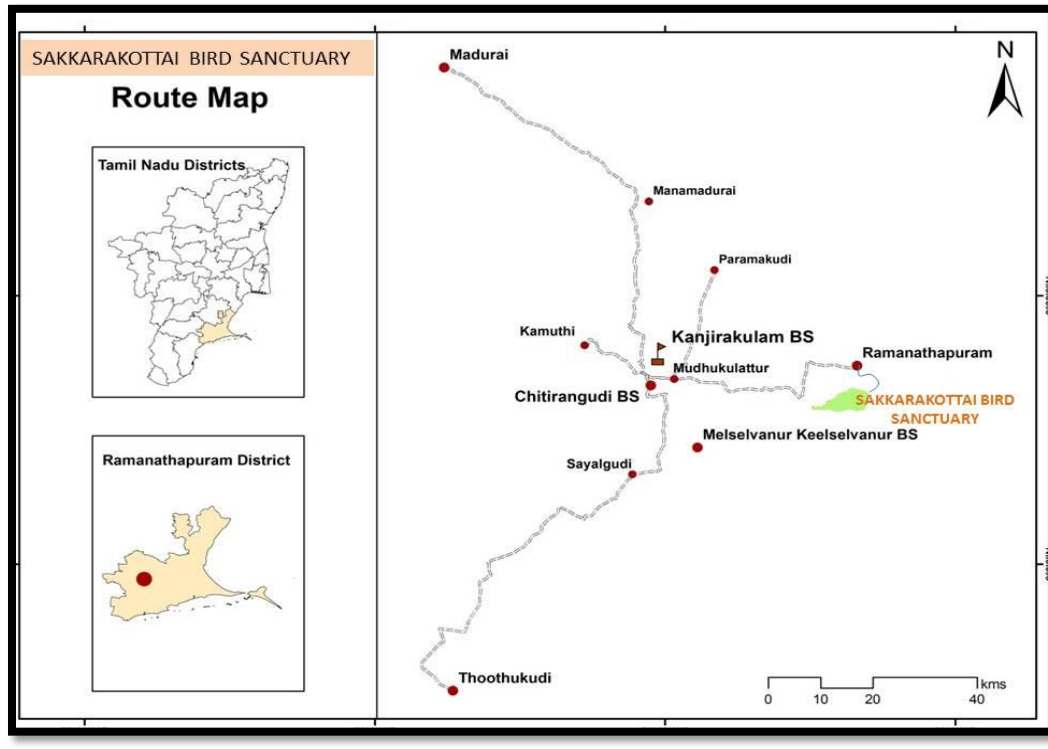
ANNEXURE -V

Performa of Action Taken Report:

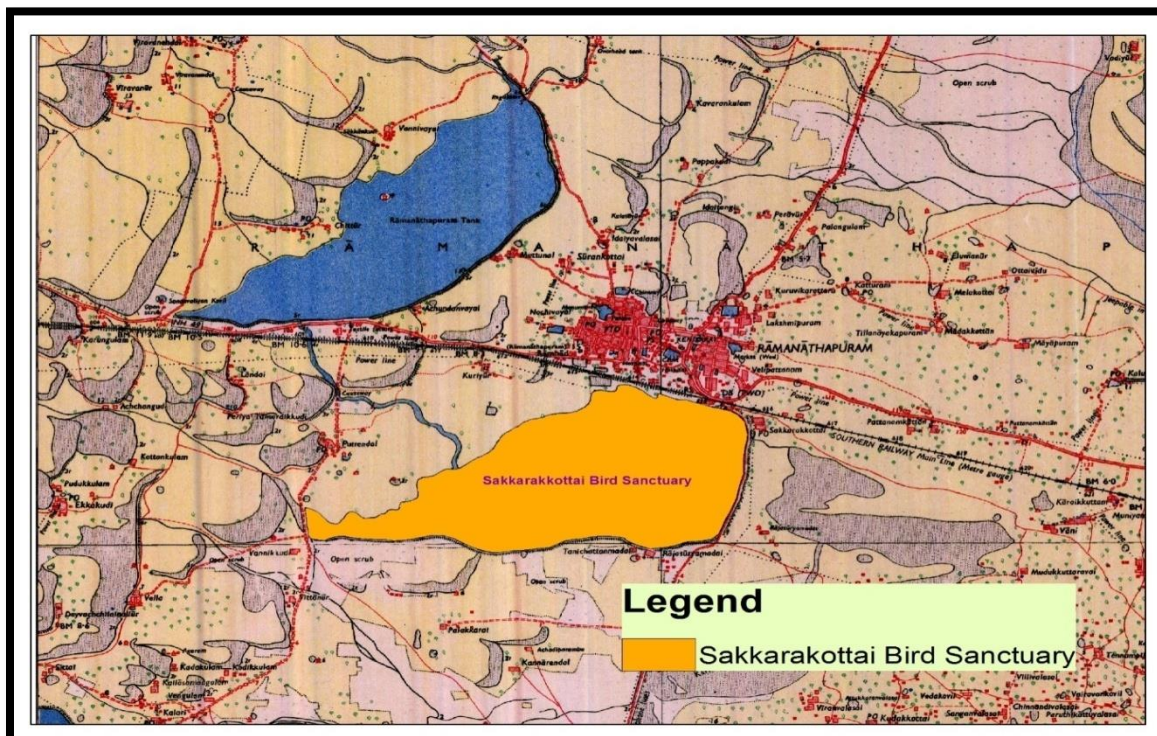
1. Number and date of meetings.
2. Minutes of the meetings: (mention noteworthy points. Attach minutes of the meeting as separate Annexure).
3. Status of preparation of Zonal Master Plan including Tourism Master Plan.
4. Summary of cases dealt with rectification of error apparent on face of land record (Eco-sensitive Zone wise). Details may be attached as Annexure.
5. Summary of cases scrutinised for activities covered under the Environment Impact Assessment Notification, 2006 (Details may be attached as separate Annexure).
6. Summary of cases scrutinised for activities not covered under the Environment Impact Assessment Notification, 2006 (Details may be attached as separate Annexure).
7. Summary of complaints lodged under section 19 of the Environment (Protection) Act, 1986.
8. Any other matter of importance.

MAPS

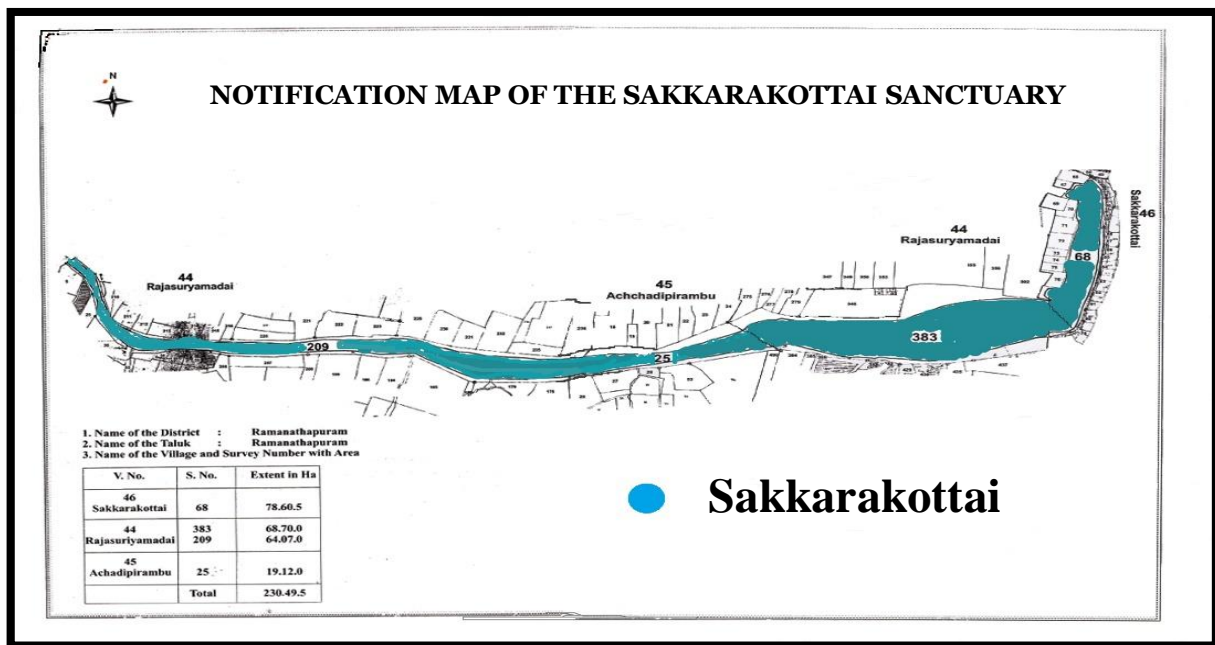
MAP No. - 1. LOCATION MAP OF SAKKARAKOTTAI BIRD SANCTUARY



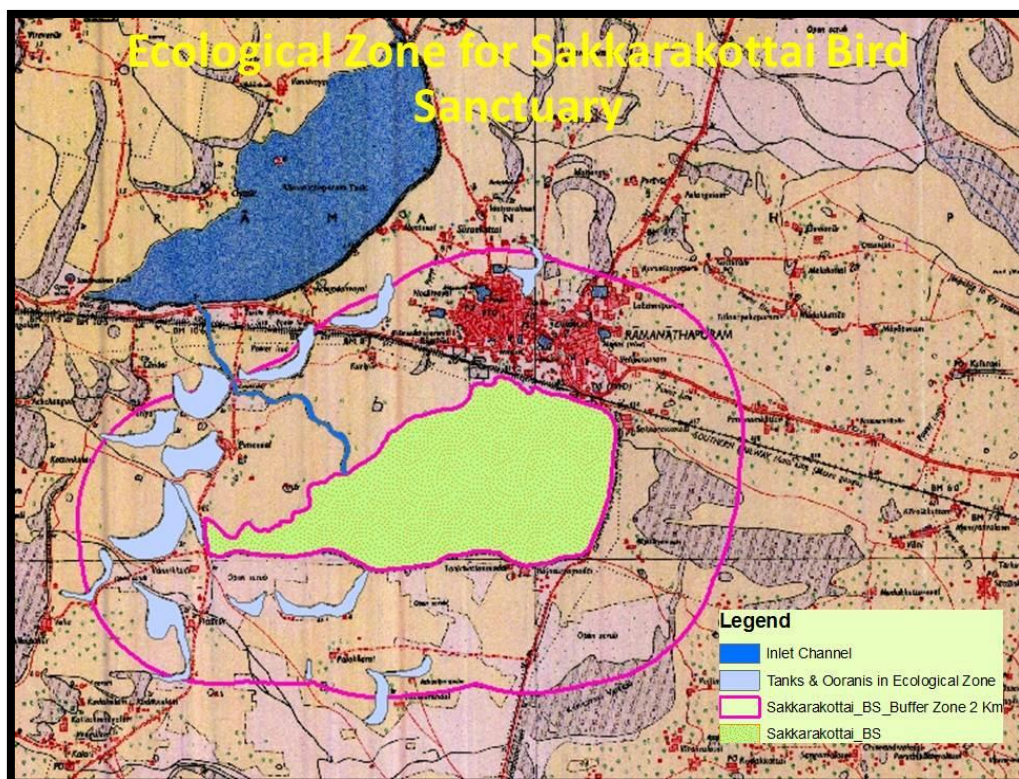
**MAP NO. 1(a): LOCATION MAP OF SAKKARAKOTTAI BIRD SANCTUARY
SUPERIMPOSED ON THE SURVEY OF INDIA TOPO SHEET OF 1: 50,000 SCALE**

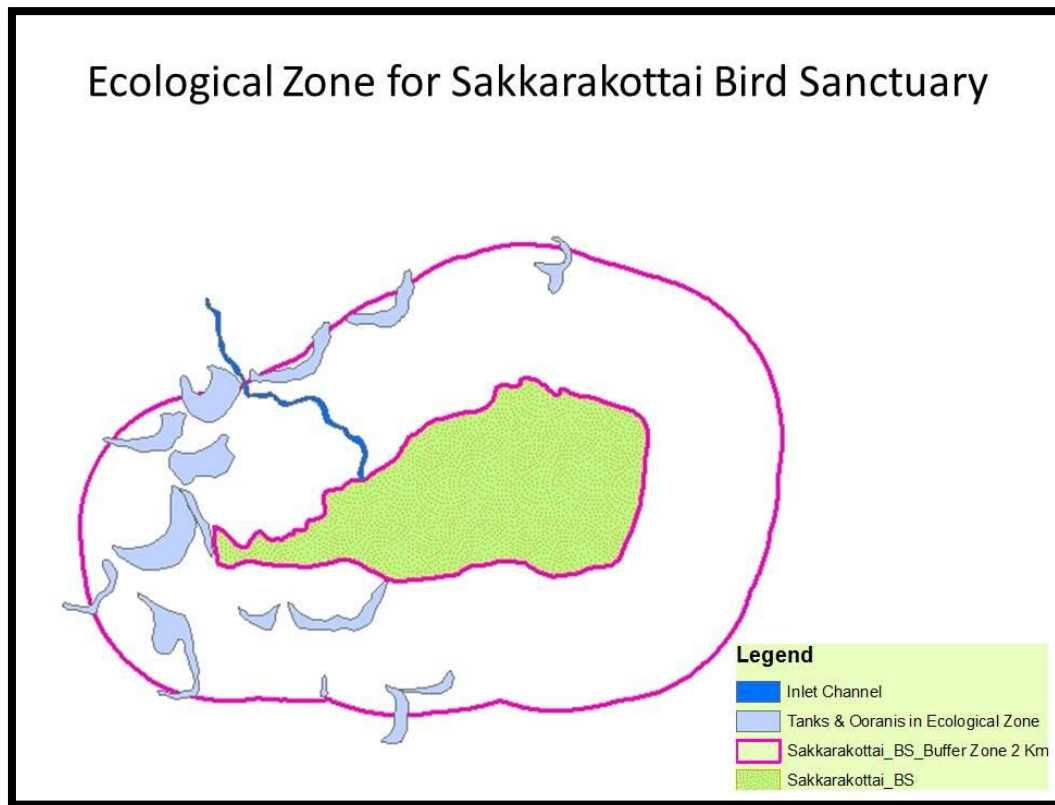


MAP 2: LEGAL BOUNDARY MAP OF SAKKARAKOTTAI BIRD SANCTUARY



MAP No. - 3. ECOLOGICAL BOUNDARY AROUND THE BIRD SANCTUARY





MAP 4: Eco Sensitive Zone of Sakkarakottai Bird Sanctuary

MAP OF ECO-SENSITIVE ZONE OF SAKKARAKOTTAI BIRD SANCTUARY ALONG WITH LATITUDE AND LONGITUDE OF PROMINENT LOCATIONS

