DRAFT MANAGEMENT PLAN

FOR

VELLODE BIRD SANCTUARY

(2022-2023 to 2026-2027)

By

Thiru. S.GOWTHAM, I.F.S.,

District Forest Officer,

Erode Forest Division, Erode – 638 004.

Under the direction of

THE CHIEF CONSERVATOR OF FORESTS AND FIELD DIRECTOR,

SATHYAMANGALAM TIGER RESERVE, ERODE.

For approval of

THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS AND

CHIEF WILDLIFE WARDEN, CHENNAI.

TABLE OF CONTENTS

PART – I

PART – II

ABBREVIATION

ABBREVIATION	EXPANSION
PA	Protected Area
VBS	Vellode Birds Sanctuary
WII	Wildlife Institute of India
WWF	World Wide Fund for Nature
BNHS	Bombay Natural History Society
SACON	Salim Ali Centre for Ornithology and Natural History
CAF	The Central Asian Flyway
NGO	Non-Governmental Organization
LBP	Lower Bhavani Project
MSL	Mean Sea Level
ha	Hectare
Sq.km	Square kilometer
Km	Kilometer
DAP	Diammonium phosphate
PWD	Public Works Department
EDC	Eco-Development Committee

PART – I

CHAPTER - I

INTRODUCTION TO THE PROTECTED AREA

1.1. Name, Location, Constitution and Extent

Name:

Vellode Bird Sanctuary provincially known as Periyakulam Eri is one among the 141 Prioritized wetlands in Tamil Nadu. The wetlands have been evaluated and prioritized state wide considering factors like size of the wetland, unseasonal bird counts, and records of breeding and roosting colonies. The Sanctuary was notified during the year 2000 and sprawls in an area of 77.185 ha.

Location:

Vellode Bird Sanctuary is located between 11°15'20" N to 11°04'50" N latitude and 77°38'40" E to 77°39'30" E longitude and covers an area of 77.185 ha (0.77 sq.km) in Perundurai Taluk of Erode District. This supports a large number of resident and migratory birds. This area has been regularly receiving visitors to view the various migratory and native birds visiting and nesting here. The tank supports the fringe villagers for agriculture practices.

Constitution:

The Government notified its intention to declare the area under Section 18(1) of Wildlife Protection Act 1972 in G.O. Ms.No.237, Environment and Forests (FR-V) Department, dated 30th June 1997. Further the Government declared it under Section 26 of Wildlife Protection Act 1972 on 17.4.1998. Finally, this area was declared as “Bird Sanctuary” under Section 26(1) of Wildlife

Protection Act 1972 (Central Act 53 of 1972) in G.O. Ms. No. 44, Environment and Forests (FR V) Department, dated 29.2.2000 and it was published in Tamil Nadu Gazette on 22.3.2000.

Extent:

The total area of the Vellode Bird Sanctuary is 77.185 ha. It comprises of 75.935 ha. of Periyakulam Eri in S.F. No. 584 and 1.250 ha. of Odai Poramboke in S.F. No. 503 in Vadamugam Vellode village.

1.2 Approach and Access

This Birds Sanctuary is situated 12 Km away from Erode on the Erode- Chennimalai main road and is easily accessible by road. The Sanctuary can also be approached from Chennimalai (10 Km) via Vellode, from Coimbatore 85 Km via Perundurai (Nearest Airport). V.Mettupalayam or Vellode village is easily accessible by road and a small diversion road provides an easy approach to the Sanctuary.

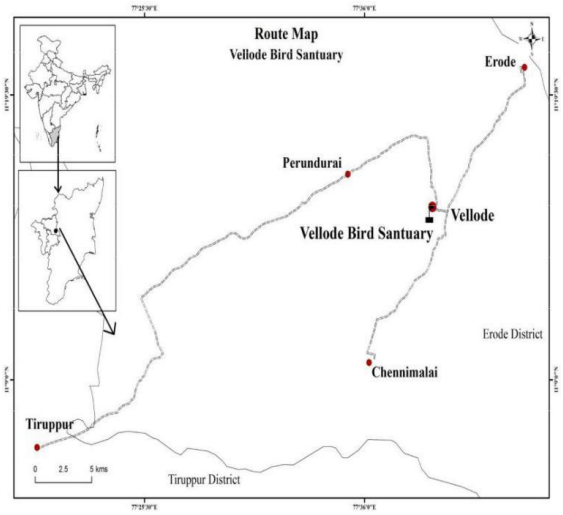
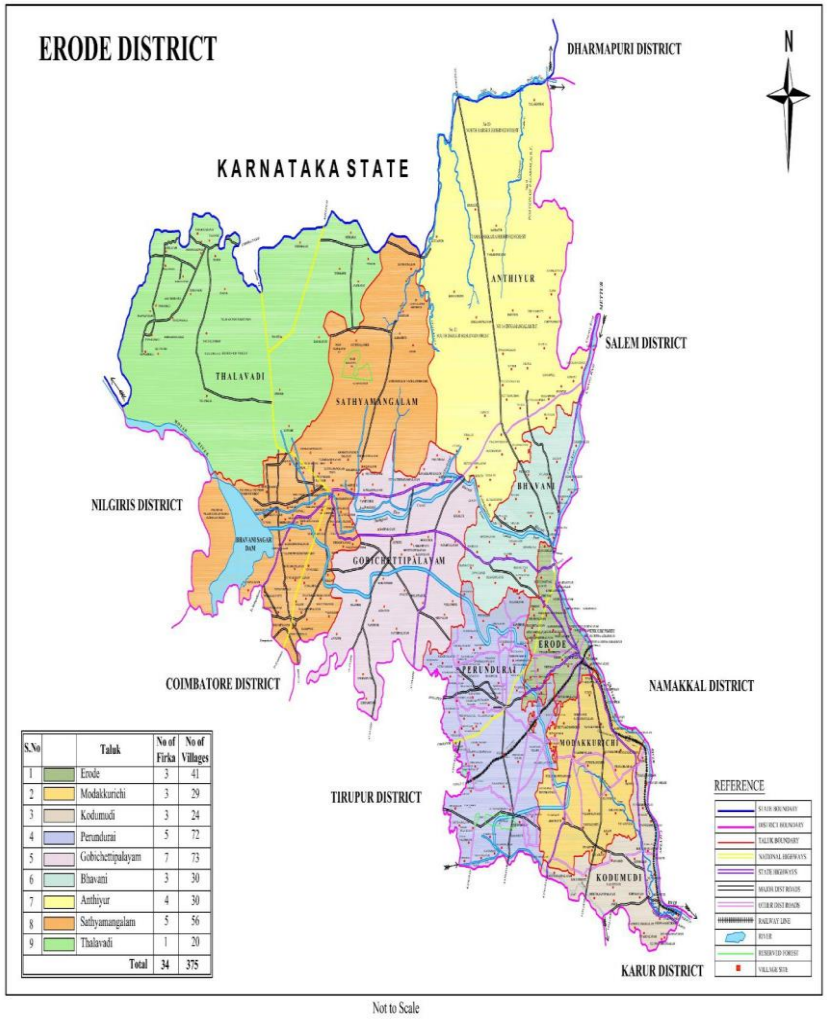


PLATE: 1



S.No	Taluk	No of Firka	No of Villages
1	Erode	3	41
2	Modakkurichi	3	29
3	Kodumudi	3	24
4	Perundurai	5	72
5	Gobichettipalayam	7	73
6	Bhavani	3	30
7	Anthiyur	4	30
8	Sathyamangalam	5	56
9	Thalavadi	1	20
	Total	34	375

Not to Scale

PLATE: 2 - ERODE DISTRICT MAP

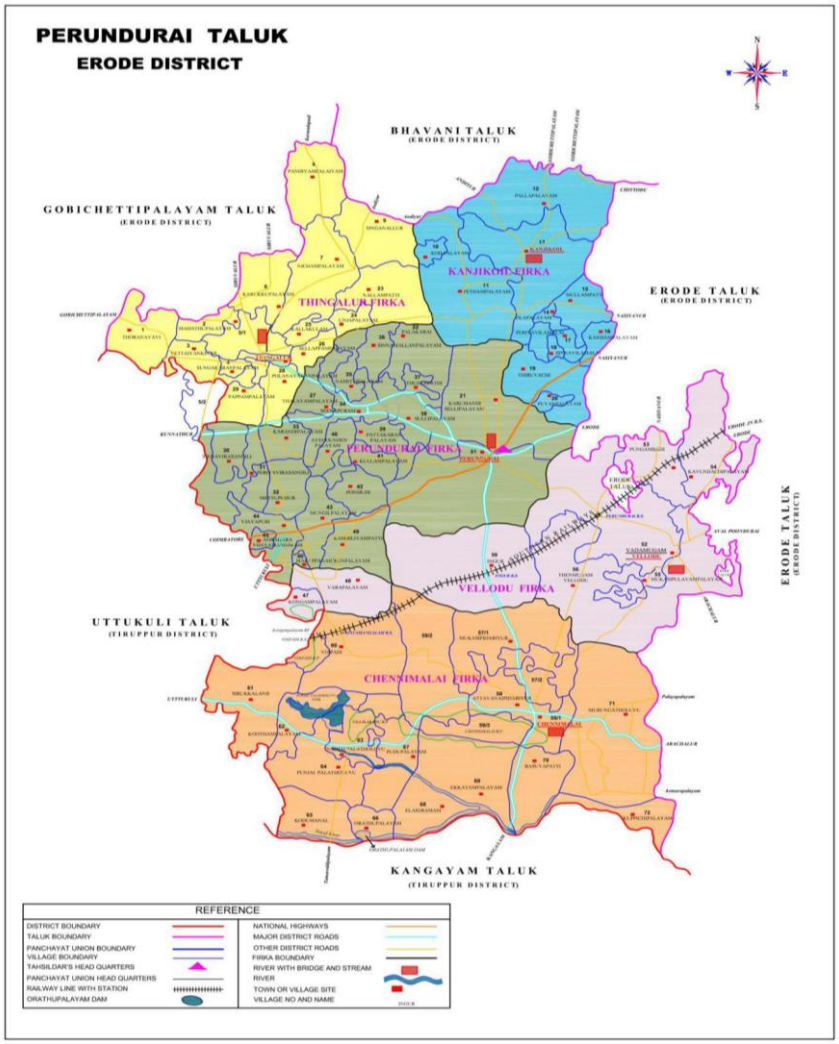


PLATE:3 TALUK MAP

1.3 The Statement of Significance

1.3.1 Landscape attributes

Vellode Bird Sanctuary is one among the ten **critical breeding habitats of wetland birds** in Tamil Nadu. It is situated near the city of Erode which has no other ecologically refreshing recreation facilities nearby.

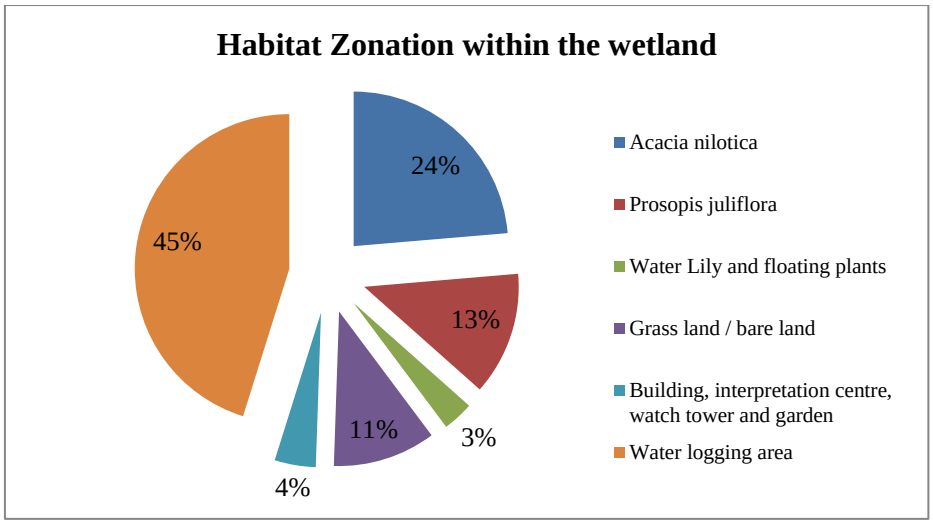
SUBJECT	DESCRIPTION
Topography	Plain
Altitude	Sanctuary elevation varies between 140 m to 160 m MSL
Orientation	Inland
Ecosystem	Part of flood plain and agricultural ecosystem
Bio-geographic zone (as defined by the Wildlife Institute of India)	No.6 Deccan Plateau Zone
Agro-ecological zone (as defined by the Indian Council of Agricultural Research)	Eastern Ghats and Tamil Nadu Uplands and Deccan (Karnataka) Plateau, Hot Semi Arid eco-region (H1D2)
Predominant vegetation	*Acacia nilotica* (Babul), *Prosopis juliflora* (Seemai karuvelai)
Whether an individual entity or part of a wetland complex	Individual wetland

1.3.2 Habitat and Hydrology

SUBJECT	DECRIPTION
Whether rain fed or canal fed	Rain fed and fed by seepage water from the Lower Bhavani Project (LBP) main canal
If canal fed; describe the feeder canals, seepages, overflows, gully	LBP Canal seepage
Directional flow of water; seasonal / tidal / perennial;	Perennial, West to East drainage
Water table	4m and seasonal variation; Summer 0.4 m (in Eastern pool)
Type of soil	Clay soil and Red Sandy Soil

1.3.3 Habitat Zonation within the Wetland: types and area under each type

HABITAT TYPE	AREA (HA.)
Acacia nilotica	22
Prosopis juliflora	12
Water Lily and floating plants	03
Grass land / bare land	10
Building, interpretation centre, watch tower and garden	4.0
Water logging area	42



1.3.4 Land use history of wetland

SUBJECT	DESCRIPTION
Name of the wetland	Periyakulam Yeri
Specific land use type around the Bird Sanctuary	Agriculture : with intermittent pockets of horticulture and plantation crops
Changes over the last decade in land use; over a 5 km radius	Agricultural land converted to housing Plots and cropping pattern is highly dependent on monsoons.
Total area under cultivation	728 hectares (Rain fed and irrigated) around the Bird Sanctuary.
Predominant systems of irrigation	Lower Bhavani Project canal and Wells
Use of organic / inorganic fertilizer	1. Urea 2. DAP 3. Potash 4. Complex fertilizer 5.Neem cake
No. of small, medium and large farmers	Small farmers 300, Medium farmers 205 and Large farmers 95.
Number of households engaged in commercial fishing	4 to 5 families
Fish species harvested for subsistence	Rohu, Catla, Tilapia, Common carp, etc in Chinnakulam Eri, Vellode. However no fishing activity is permitted in periyakulam Eri, since declaration of Birds Sanctuary. (last fishing lease was in 1984 by PWD)

1.3.5 Demographic details of the landscape

Numbers and names of villages in close proximity to the Birds Sanctuary (3 km radius):

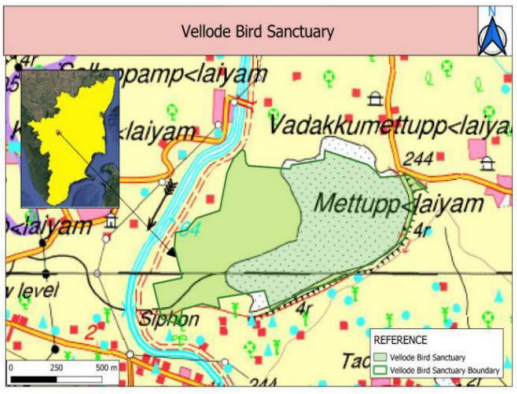
6 Villages:

1. Karukkangattu valasu,

2. Vellode Mettupalayam,

3. Thalaikattur,

PLATE:4 - TOPOSHEET OF VELLODE WITH ITS FRINGE VILLAGES



4. Sellapampalayam,

5. Semmandapalayam and

6. Thatchangarai Vazhi.

Numbers and names of Panchayats in close proximity to the Birds Sanctuary (3 km radius):

3 Panchayats:

1. Vadamugam Vellode, 2. Pungampadi, 3. Kumaravalasu (Thenmugam Vellode).

SUBJECT	DESCRIPTION
Population (as per 2011 census)	(6 villages) Male : 1649; Female : 1497
No. of households and the density of human presence	985 households; with a density of 3.19 persons/ household
Literacy levels, including number of functionally literate	75%
No. of land owning house holds	960
Occupational categories	Primary : Agriculture; Secondary : Cattle rearing
Livelihood categories	Agriculture and cattle rearing
Number of Below Poverty Line households	308
Social infrastructure in the landscape (for example: PHCs, Schools etc.)	Primary Schools – 2 Govt. Higher Secondary School – 1 Primary Health Centre – 1 VAO, RI office and Police Station – 1
Presence and functioning of organized groups such as SHGs, VFCs etc.	10 women self-help groups are present; whose main activities are selling flowers and small business.

1.3.6 Infrastructure

SUBJECT	DESCRIPTION
Roads (types) around the Birds Sanctuary	Black topped road (2 kms) remaining are Metalled /Mud road
Connectivity to nearest major town	Erode Town at 12 km distance
No major industrial house or other detrimental developmental projects around the Birds Sanctuary	

1.3.7 Cultural aspects of wetland use / landscape

The wetland does not have any known traditional or customary systems of water conservation, nor does the landscape have any sacred groves or species. However, within the immediate periphery of the Sanctuary, there is an old Karupparayan temple which attracts a number of devotees.

The Periyakulam Yeri is a rain fed tank and not connected with any other channel system. The Lower Bhavani Project canal which runs near the Sanctuary has no separate sluice to this tank and the tank is fully dependent on the seepage water from the channel and monsoon rains. It has an ayacut of 37.88.5 ha, (comprising of 29.84.5 ha in Thenmugam Vellode village and 8.04.0 ha in Vadamugam Vellode village). The tank has two outlets for serving irrigation purpose, which are regulated through sluice mechanism for ensuring water availability for the birds throughout the year. Those who come to worship the temple are likely to visit the Sanctuary also and vice-verse. The farmers are also happy about the Sanctuary because the farmers feel that their crop yields are better after the arrival of large number of birds in the Sanctuary because of the irrigation water getting enriched due to the droppings of birds.

This is an added advantage to the farmers, who are always eager to have better productivity with organic fertilizers. The inhabitants of Erode and nearby areas visit the famous Chennimalai temple, which is an abode of Lord Muruga. Since the Sanctuary is situated en-route to Chennimalai, most pilgrims often alight at V.Mettupalayam (a small hamlet near Vellode) and make their visit to the Sanctuary for recreation. This Sanctuary is a place where people can have the pleasure of enjoying an eco-friendly, nature oriented recreation, with minimal expenditure. People from all strata of society have easy access to this Sanctuary to spend their leisure in a useful way.

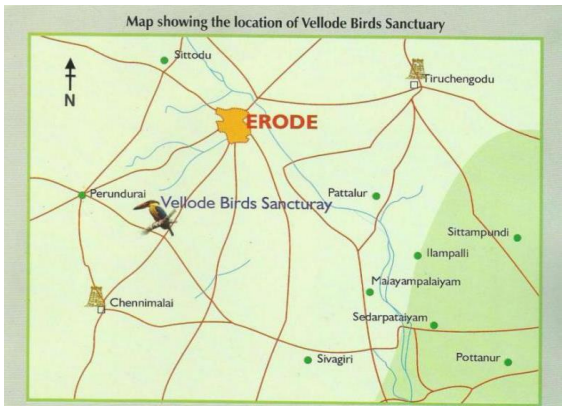


PLATE: 5 - LOCATION MAP

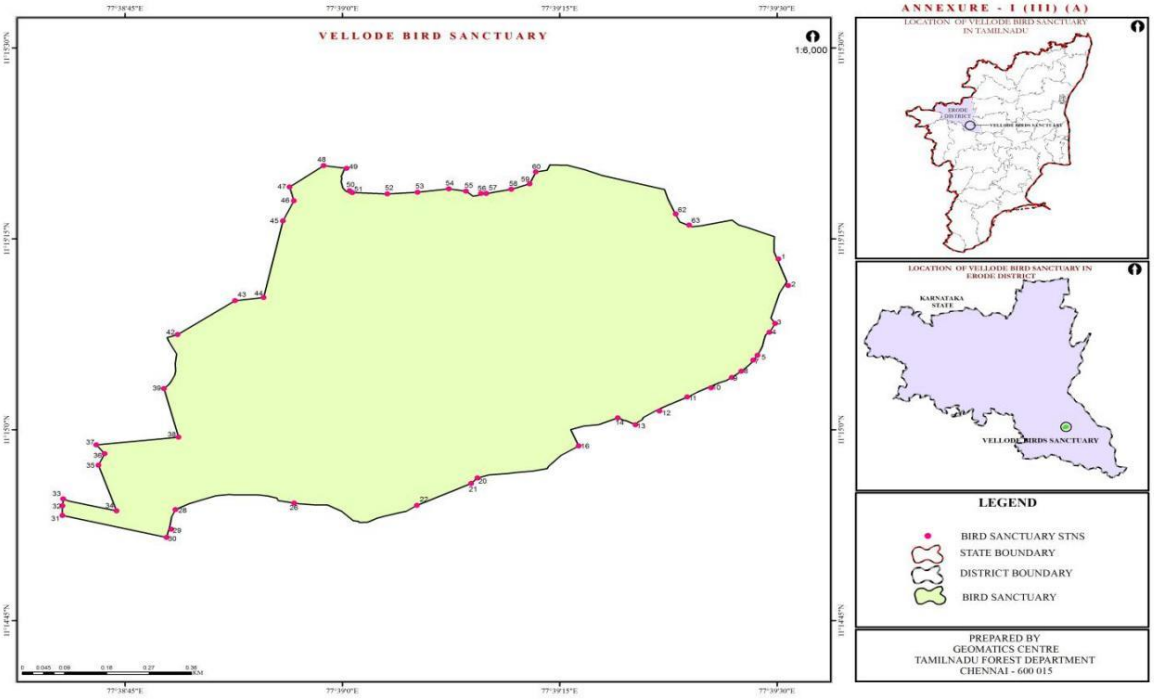


PLATE:6 BOUNDARY MAP OF VELLODE BIRD SANCTUARY

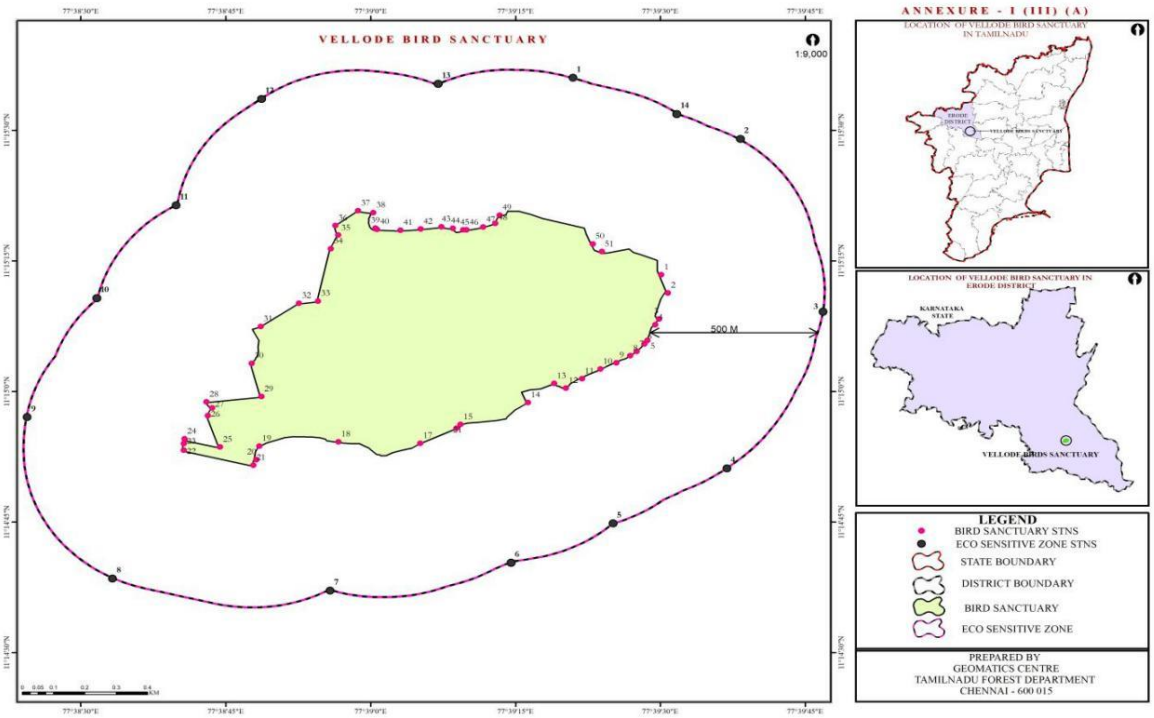
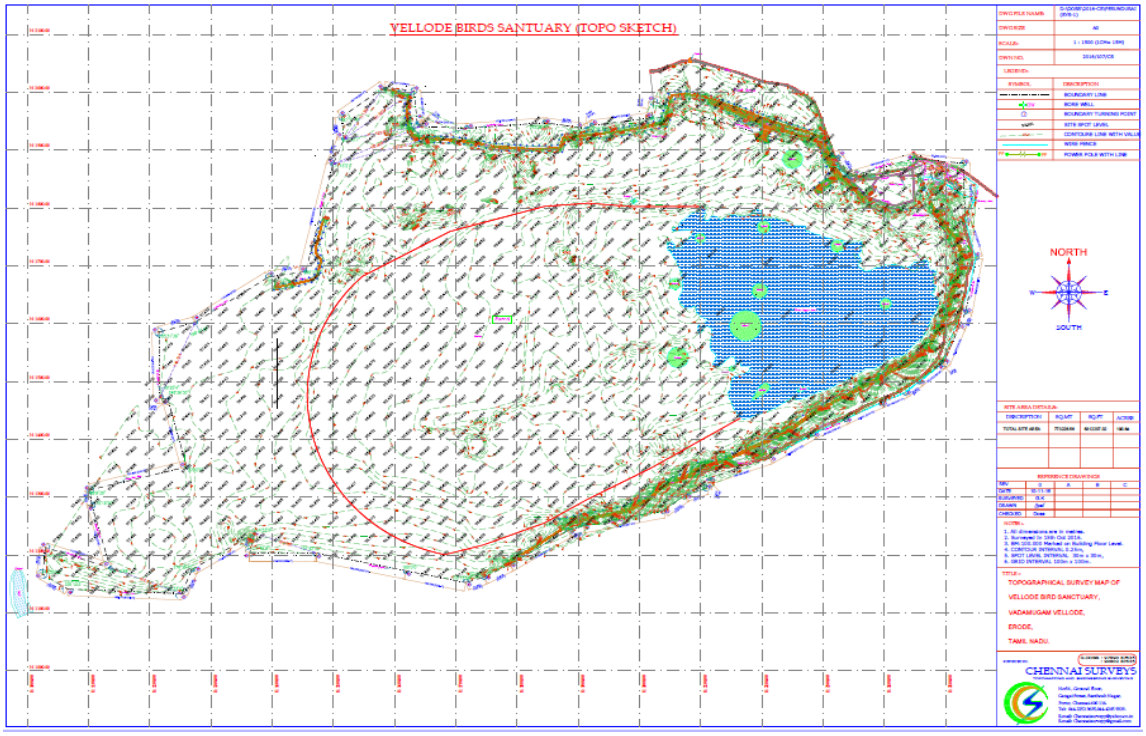


PLATE:7 PROPOSED ECOSENSITIVE ZONE OF VELLODE BIRD SANCTUARY



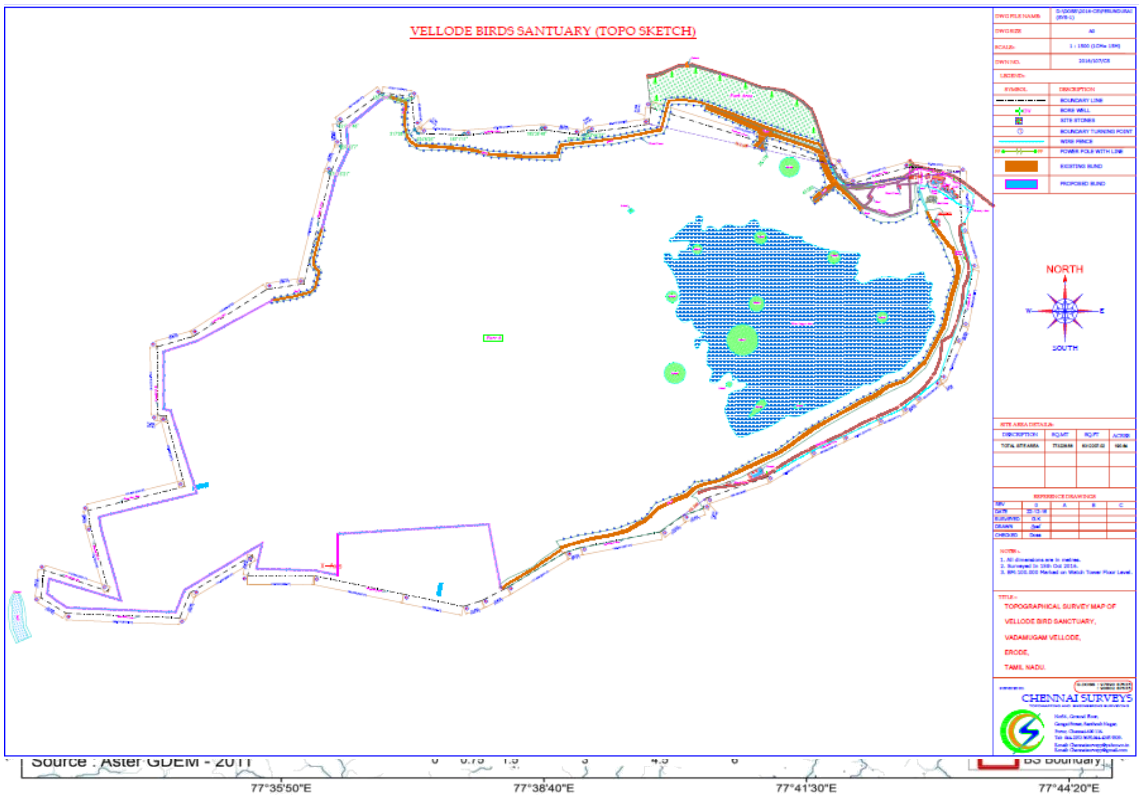


PLATE:8 CONTOUR MAPS OF VELLODE BIRD SANCTUARY

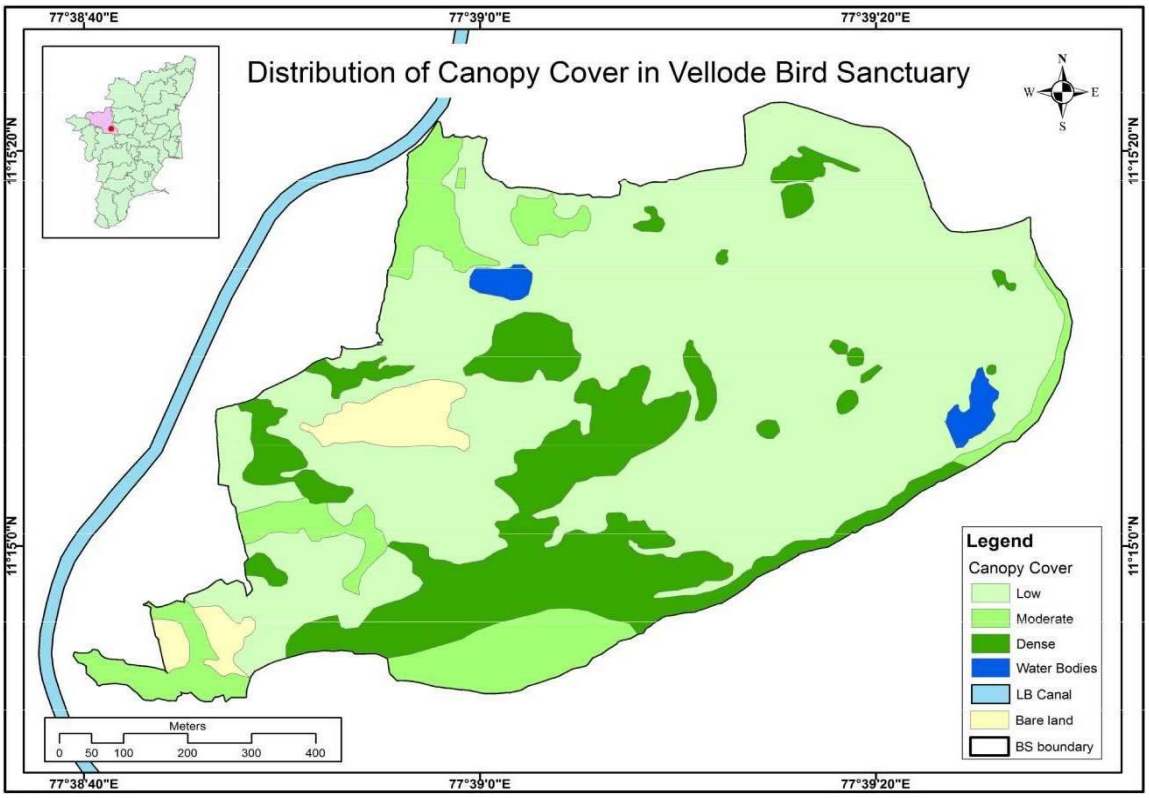


PLATE: 9

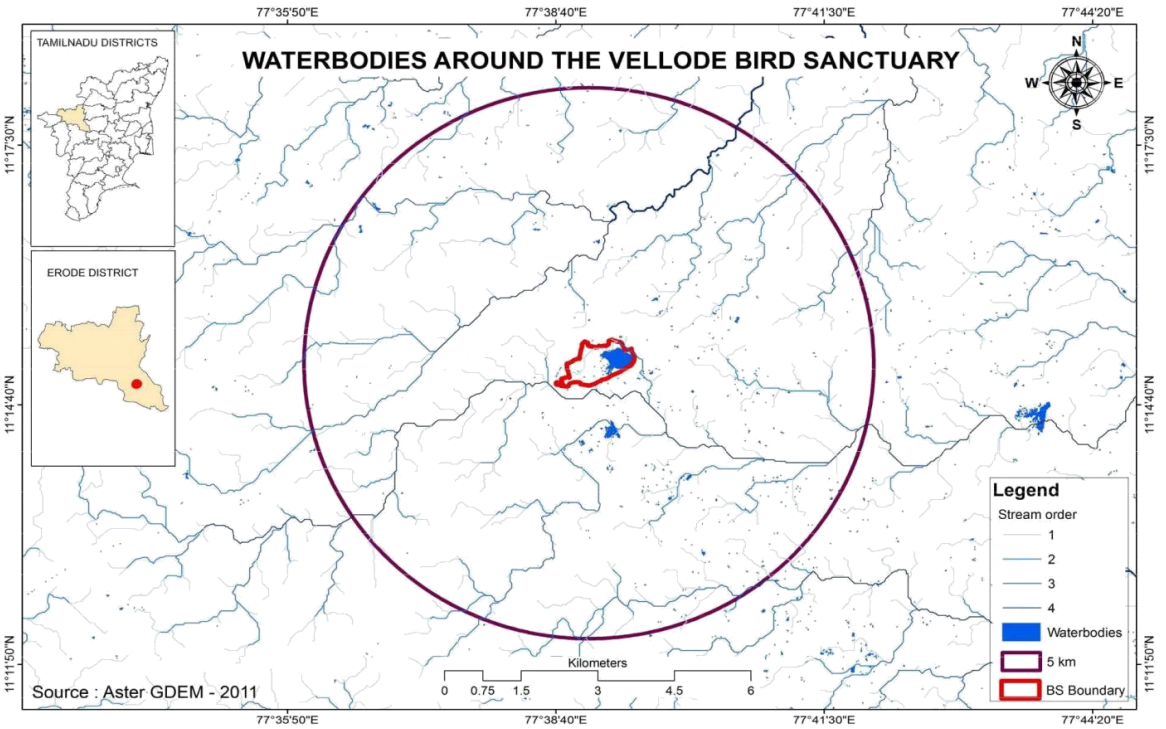


PLATE : 10

CHAPTER – II

BACKGROUND INFORMATION AND ATTRIBUTES

2.1 Boundaries

The Vellode Bird Sanctuary is situated over the entire area of S.F. No. 584 (75.935 ha.) and S.F. No. 503 (1.250 ha.) of 109 Vadamugam Vellode village of Perundurai Taluk in Erode District. It is situated near the city of Erode which has no other ecologically refreshing recreation facilities nearby which is a key attribute. The boundaries of the Sanctuary are as given below

East: Starting from the tri-junction of No.109 - Vadamugam Vellode, No.110 - Pungambadi and No.113, Thenmugam Vellode village of Perundurai Taluk the boundary runs towards, south along western boundary of S.F.No.1294, 1292 and 1258 of Thenmugam Vellode till the supply channel of Thenmugam Vellode. Thence, the boundary runs towards south-west of S.F.No.1257, 1256 and 1255 till it meet supply channel of Vadamugam Vellode.

South: Thence, the boundary starts from S.F.No.601 and runs towards west and south-west of S.F.No.600, 599 and 586. Thence the boundary runs towards north, west and south till it meets S.F.No.502. Thence it runs towards west and south-west of S.F.No.502 to meet the tri-junction of S.F.No.505, 503 and 584.

West: Starting from the tri-junction of S.F.No.505, 503 and 584 the boundary runs along Odai-Poramboke of S.F.No.503 thence, towards west of 505, north of S.F.No.504, east of 507 and crosses the Odai-Poramboke to meet the tri-junction of S.F.No.503, 584 and 513. Thence, the boundary runs towards north along eastern boundaries of S.F.No.513, 514, 515 and 521 till it meets the Lower Bhavani Project main canal.

North: Starting from Lower Bhavani Project main canal in the S.F. numbers 572 the boundary runs towards east along the southern boundary of S.F.No.575, 580, 581, 582 and 583 to meet S.F.No.110 of Pungambadi village border. Thence, the boundary runs towards south, north-east along with the southern border of S.F.No.381 to meet the starting point.

2.2 Geology, Rock and Soil

The Eastern side of the lake has small portions of rocky outcrops. The soil here are of two types i.e., red gravelly soil and black cotton soil. The soil within the tank is deeper and without rocky outcrops. Humus content of soil is low but calcium content is high possibly due to accumulation of bird droppings and skeletal remains of aquatic life forms.

2.3 Terrain

The terrain of the Sanctuary is flat with gentle slope from north-west towards south-east. Bulk of the impounded water collects in the south-east part of the Sanctuary where it is deepest. The Sanctuary is however losing its original depth due to years of siltation.

PLATE: 11 VELLODE BIRD SANCTUARY-LANDSCAPE VIEW

2.4 Climate

The climate of Erode is dry and hot.

2.4.1 Rain fall pattern and distribution

Vellode and its surrounding villages receive rainfall mainly from the North-East monsoon between, September to December. During the period between, February to June, the area generally remains dry. The average annual rainfall in this area is about 730 mm. The average number of rainy days in a year is about 55 days. During the year 2015-16 to 2017-18 there was very less rainfall recorded hence water condition of the tank seems to be very dry. In 2018-19 onset of Northeast monsoon resulted in moderate rainfall in the district hence the water record in the tank was found, and also since the tank is rainfed water source of tank started increased from seepage of Lower Bhavani Project Canal due to successful monsoon.

Rainfall	Normal annual rainfall is between 575 mm to about 835 mm.
Relative humidity	Highest temperature 41^{o}C. Minimum temperature is 19^{o}C. The relative humidity varies from 65 to 87 percent during the northeast monsoon period between October and November.
Wind pattern	Cool-dry

S. No	Month / Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	Jan	31	2	48.4	0	0	17.9	12	257.5	0	0	0	85.0
2	Feb	0	231	1	491.4	2.8	68	0	0	2738	0	0	88.0
3	Mar	77.8	143.4	7	10	34	398.8	6	892.6	233.6	0	0	88.0
4	Apr	612.4	1935.6	1078.6	669.1	37.4	1810	223.6	1316	448.3	18.0	105.0	214.0
5	May	2470.6	1240.6	1091.4	785.2	1388.9	2052.2	910.3	2711	4046.5	81.0	28.0	235.0
6	Jun	453.4	463.7	438.4	981.7	622.5	879.7	1003	458.8	431.6	19.0	55.0	289.0
7	Jul	1222.7	818.5	404.3	101.1	385.1	150.4	1450	323.8	573.8	45.0	142.0	474.6
8	Aug	1639.6	1421.2	957.7	1114.1	1696.8	1166	1015	1995.7	505.3	61.0	7.0	549.0
9	Sep	1864.2	948.2	1533.6	1735.3	2465.6	1893.5	307.2	3685	3768.4	97.0	221.0	640.0
10	Oct	2593.4	3108.7	2835.5	2612.4	5102.9	2405.2	437.8	2419	2368.98	171.0	55.0	700.0
11	Nov	5827.2	3629	677	1014.3	689.5	4587.5	205.1	714.3	1490.9	115.0	116.0	-
12	Dec	579.1	354.2	145.2	334.3	0	426.3	420.7	957	152.5	41.0	48.0	-
Total		**17371.4**	**14296.1**	**9218.1**	**9848.9**	**12425.5**	**15855.5**	**5990.7**	**15730.7**	**16757.88**	**648.0**	**777.0**	**2662.0**

Table: Rainfall details for Erode District from the year 2010-2021 [year wise (in mm.)]

2.4.2 Temperature

Temperature various from 19^{o}C to 38^{o}C throughout the year. March to June being the hottest period, the average maximum temperature is about 33^{o}C and the average minimum temperature is about 22^{o}C. During the peak summer, the maximum temperature reaches up to 41^{o}C.

2.5 Water Sources

There is no assured water source in the Vellode Bird Sanctuary. It is a storage tank which is used to hold water for irrigating the adjoining agricultural fields. This tank receives water through the seepage from the Lower Bhavani Project canal system (the outlet of Lower Bhavani Dam) and through rain water from its watershed in Perundurai area. There is no provision for inflow of water from the above Channel.

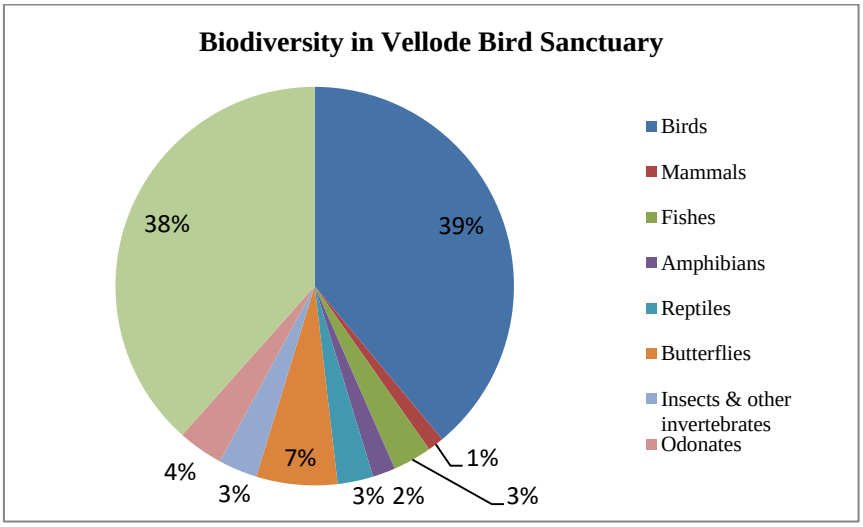
Water is generally received from the middle of August during monsoon. However some water is retained even during dry period in the deeper portions of the lake. Since this tank is mainly a rain fed one and a non-system tank, efforts have to be made to convert this into a system tank, by providing a separate sluice from the Lower Bhavani Canal.

PLATE:12 SEEPAGE WATER INLET FROM LBP CANAL TO VELLODE BIRD SANCTUARY

2.6 Biodiversity

The biodiversity of the Vellode Bird Sanctuary can be summarized as follows:- (furnished in Annexure I to XII)

Species	Total
Birds	148
Mammals	05
Fishes	12
Amphibians	07
Reptiles	11
Butterflies	25
Insects and other invertebrates	12
Odonates	14
Insects and other invertebrates	12
Plants	146



2.6.1 Vegetation

Vellode Bird Sanctuary as such is a storage tank used basically for irrigation and as such there are no forests in the Sanctuary. The main vegetation of the Sanctuary is *Acacia nilotica* (Karuvel) plantation which was raised by Coimbatore Social Forestry Division during 1983 over an extent of

39.60 ha. The other tree species present in the Sanctuary includes *Azardiracta indica*, (Neem), *Borassus flabellifer* (Palmyrah*), Terminalia arjuna* (Neermaruthu) and *Eucalyptus* species found along the bund. Natural regeneration and growth of *Prosopis juliflora*, (Seemaikaruvelai) are found vigorous in some patches. Fruit bearing plants are being raised to enrich the habitat. The Birds droppings along the bund has given rise to copious germination and growth of *Muntingia calabura (*Singapore cherry) all along the bund.

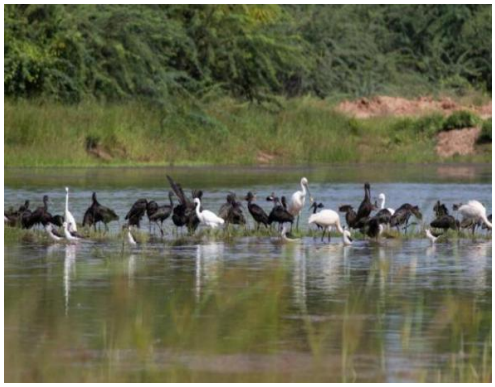


PLATE:13 AVIFAUNA AND VEGETATION COVER IN VELLODE BIRD SANCTUARY

2.6.1.1 Wetland Vegetation

Wetland or Aquatic vegetation is the plants, which grow in water either partially or fully.

2.6.1.2 Emergent, submerged and floating vegetation

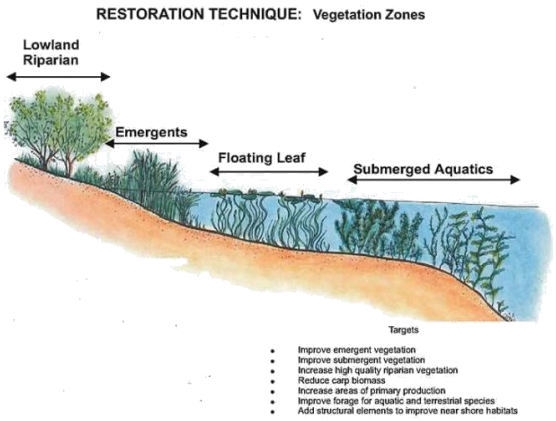
The Birds Sanctuary has been divided into three zones for floral documentation determinations *viz.* Peripheral zone, Marshy zone and Aquatic zone. Plants were collected in all these zones and identified to know the plant diversity. The identified plants are tabulated zone wise for easy recognition.

Plants that grow in littoral zones are classified into three group *viz*. Emergent plants, Floating-leaved plants and submerged plants.

1. Emergent plants inhabit the shallowest water and are rooted in the sediment with their leaves extending above the water's surface *e.g.Polygonum* spp., *Typha* sp. etc.

2. Floating-leaved plants grow at intermediate depths. Few species are rooted in the sediment; some are free- floating with roots that hang unanchored (*Lemna* sp.). The leaves of floating-leaved plants float more or less flat on the surface of the water *e.g. Nymphaea* spp. (Water-lily).

3. Submerged plants are rooted in the soil and where they get sufficient light to support their life cycle *e.g.Hydrilla* spp.

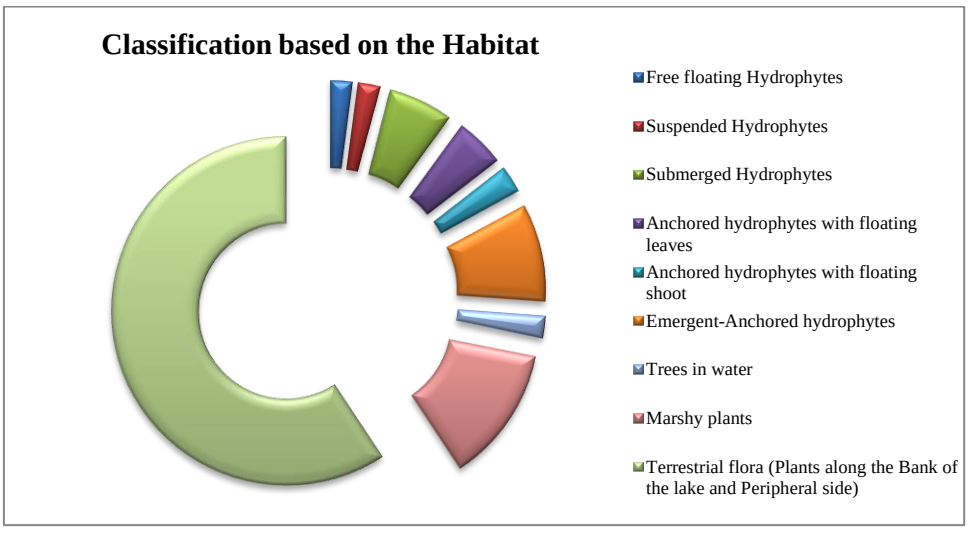


2.6.1.3 Terrestrial Vegetation

During the field survey about 200 plants were identified and documented so far. The plants were classified based on their habitat. Some plants are in transitional habitat from Aquatic to semi-aquatic to marshy and along the bank as terrestrial. This study was conducted by Dr.R. Gopalan and Dr.S. Sambooranam, the Report of "The Aquatic Vegetation: Vellode Bird Sanctuary" (Monitor/Document Aquatic Vegetation-TBGP – 1.1.1.4.) in the year 2019.

The classification based on the habitat as follows:

Sl.No	Name	No.of Species
1	Free floating Hydrophytes	04
2	Suspended Hydrophytes	04
3	Submerged Hydrophytes	12
4	Anchored hydrophytes with floating leaves	09
5	Anchored hydrophytes with floating shoot	05
6	Emergent-Anchored hydrophytes	18
7	Trees in water	04
8	Marshy plants	25
9	Terrestrial flora (Plants along the Bank of the lake and Peripheral side)	118



2.6.2 Avifauna

The flagship species of the Sanctuary are the grey heron, great cormorant and darter, the numbers which are reported to be declining within the Sanctuary. Country recorded about 1266 species of birds, the state recorded 506 species and Sanctuary has about 148 species which were recorded in during various seasons including the migrating birds since 2000. Vellode Bird Sanctuary attracts a large number of native and migratory birds. Both land birds and water birds are found Migratory birds are arriving at the Sanctuary during onset of north-east monsoon. Earlier not many birds were visiting this Sanctuary, but with the growth of the *Acacia nilotica* plantation in the tank, this Sanctuary has become an ideal habitat for birds because of the availability of variety of feed in the tank and in the neighbouring agricultural fields and plenty of trees for perching and nesting. Abundance of fish and other aquatic organism present in the tank attract these birds, which is part of the food chain for the birds. Every year bird population, density and behaviour including breeding etc., is monitored by the management. The list of birds recorded in the Sanctuary is furnished in Annexure-II. Available tree cover and the Prosopis cover provide shelter to a few small mammals and reptiles.

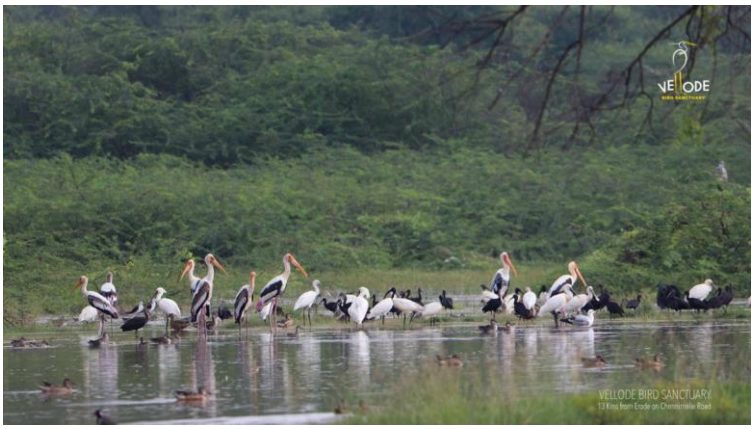
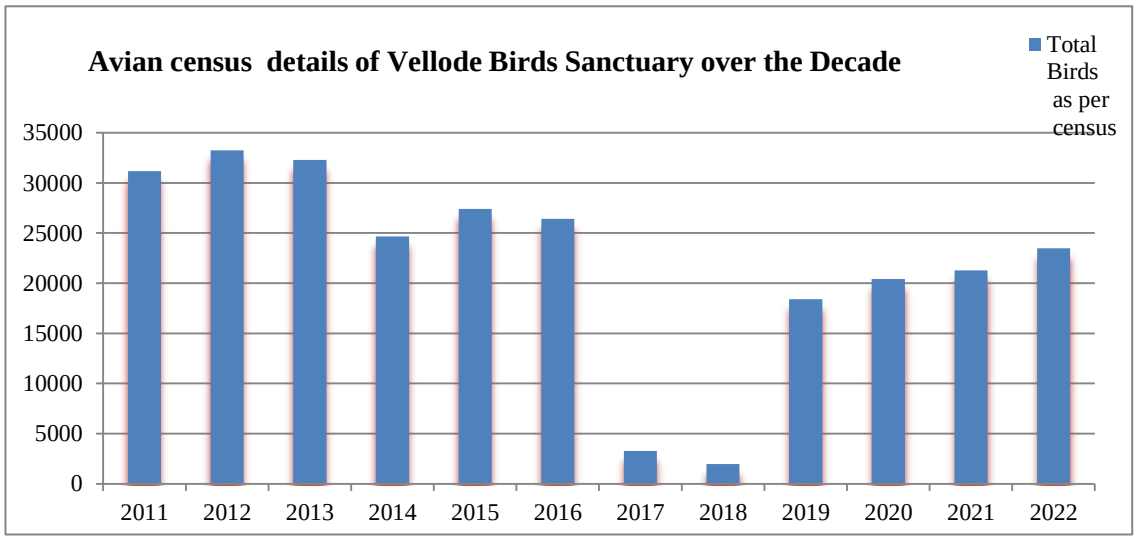


PLATE:14 – FORAGING BIRDS AT THE SANCTUARY

ANNUAL BIRD CENSUS AT THE PREMISES



CHAPTER – III

HISTORY OF MANAGEMENT AND PRESENT PRACTICES

3.1. General

Vellode got its name from the words Vellai oodai (வெள்ளை ஓடை) meaning white stream. The name is attributed to a stream which is said to have existed in Vellode with alluvial sediment making it white color. The Vellode Bird Sanctuary is an irrigation tank, which was earlier under the control of Public Works Department (PWD), Erode Division. The felling of Babul trees, which was due during 1993, was stopped due to the process of notifying this area as Birds Sanctuary. Illegal cutting of babul trees by the local residents was common sight. Since the declaration as Birds Sanctuary the fishing lease which was managed by the PWD authorities and local panchayat earlier was also stopped, to increase the feed potential of the Sanctuary.

3.2 Sanctuary Protection:

The Vellode Lake and adjoining areas are fully protected from bird trapping, encroachment and other illegal activities. There is a significant awareness among the people on the importance of conservation of birds and the legal protection they have. Also the field staffs maintain constant vigil and carryout surveillance to ensure the protection of birds and their habitat.

3.2.1 Legal Status

Vellode, Periyakulam Yeri (tank) was declared as "Vellode Bird Sanctuary" under 26 (A) (1) of the Wildlife (Protection) Act 1972 vide G.O. Ms. No. 44, Environment and Forests (FRV) Department dated 29.2.2000.

3.2.2 Consolidation of boundaries

The boundaries of the sanctuary are at present demarcated by erecting stone pillars and cairns. To extent chain link fencing has been erected around some portions of the Sanctuary. This prevents intrusion of illegal trespassers and encroachments.

3.2.3 Timber operation including Bamboo and Firewood harvest

There are no timber operations or firewood harvest in the Sanctuary.

3.2.4 Non-wood Forest Produce collections

No Non-wood Forest Produce collection exist within the Sanctuary.

3.2.5 Leases

The area was leased out for fishing annually by the PWD and local panchayat before it was declared as a Sanctuary. After declaring the area as a Sanctuary, no fishing lease has been given. Last fishing lease was given in 1984 by PWD.

3.2.6 Fishing.

There is no regular fishing activity permitted in the sanctuary.

In July 2002, due to failure of monsoons and the resultant scarcity of water, large number of fish started dying due to eutrophication. The people wanted the authorities to catch and remove all the fish immediately, least they die, which would result in degradation of the environment. The Chief Wildlife Warden, Chennai was apprised of the situation and with the permission of Chief Wildlife Warden the fish in the tank (8.00 MT available) were caught with the help of Fisheries Department and sold realizing revenue of Rs.1.63 lakhs.

In April 2017, in order to eradicate the growing menace of invasive alien African Giant Cat Fish, selective fishing was carried out as per instructions laid out in the Field Report of Dr.R.Sundara Raju IFS, Biodiversity Conservation Expert (National), March 2017, Report No. 2/148 as a measure to prevent degradation of the habitat. The cat fish pose threat to the native fishes there by reducing potential food for birds. The eradication drive was assigned to the Eco-development committee, V Mettuppalayam as per advice of the Chief Conservator of Forest, Erode Circle and the fish were sold realizing a revenue of Rs.27,907.

3.2.7 Hunting:

Hunting of birds is prohibited as per the Wildlife (Protection) Act 1972. Hunting incidence is not recorded within the boundary after declaration of the area as Sanctuary.

3.2.8 Livestock grazing

The tank generally retains only a very small quantity of water for four to five months in a year. During this dry season, occasional grazing by domestic livestock from the neighbouring villages does occur along the periphery.

3.2.9 Wild fires

No Wild fire incident has been reported in recent years. Within Sanctuary limit there is a famous Karupparayan temple, which attracts large number of devotees throughout the year. Those who come to worship the temple are likely to visit the Sanctuary also and vice versa. Fallen leaflets and dried grasses are the causes of fire during summer.

3.2.10 Regulation of other Activities

3.2.10.1 Poaching

Poaching instances inside Sanctuary is under strict control. Occasionally there are stray attempts for poaching of wild birds in the neighbouring agricultural fields. Trapping of water birds is almost controlled. Sporadic instances of illicit fishing were also not uncommon but tight protection and surprise raids and overall surveillance by the staff have yielded desired result.

3.2.10.2 Illegal cutting of trees

Because of constant vigil by the forest staff and workers there is no illegal cutting of trees from the Sanctuary.

3.2.10.3 Encroachments

Regular patrolling by the staffs and anti-poaching watchers in addition to erection of fences have prevented any act of encroachment or attempt to do so.

3.2.11 Disease Management

No wildlife disease outbreak has been witnessed within the Sanctuary. In the current year there is record of tea mosquito bug insect attacks in neem trees were noticed in the Sanctuary premises.

3.3 Habitat Improvement

3.3.1 De-silting

Drying up of Vellode Tank has almost become a regular phenomenon due to failure of monsoon rains and the excess silt gets deposited in the tank. The water received during monsoon rains cannot be stored to the maximum quantity due to large quantity of silt deposited which has reduced the storage capacity of the tank. Therefore with the permission of Chief Conservator of Forest, STR,

Erode desilting was done during the month of Aug 2002 and the removed silt was sold to the public and revenue was fetched to the tune of Rs.1.98 Lakhs. Also during May – June 2017 the top soil from the tank bund to a few inches depth was scraped and removed complying direction of Dr.R.Sundara Raju IFS, Biodiversity Conservation Expert (National), March 2017 with a scientific reason of eradicating Cat Fish eggs present in the top layer. The work was exercised through the Eco-development committee, V Mettuppalayam and the excavated silt was sold which fetched revenue of Rs.11.89lakhs.

Further desilting and deepening works were carried-out during 2017-18 employing the fund received from the Environment Department as a part of Eco-Restoration of Periyakulam Eri (Vellode Bird Sanctuary)in Vadamugam vellode village of Perundurai Taluk in Erode District. G.O. (Ms) No:134, Environment and Forest department. Dated:21.11.2016. The excavated soil was used for creation/strengthening of bund and mound formation.

DEEPENING & DESILTING WORKS

BEFORE

AFTER

3.3.2 Creation of Bunds

New bunds have been created for about 2.5kms surrounding the lake area and existing bunds of 2kms were strengthened. These activities along with desilting work have improved overall the water holding capacity of the lake.

CREATION OF BUNDS

STRENGTHENING OF EXISTING BUNDS

3.3.3 Creation of Mounds

About 5 mounds have been created in the midst of the lake that have been planted with dead trees to provide nesting and perching spaces for the birds. These mounds also offer a good view of the residential and visiting birds for the tourists.

CREATION OF MOUNDS

3.3.4 **Other improvement works**

Improvement of weirs and construction of hume pipe culverts for water inlets were carried out which have shown remarkable changes in the water holding capacity of the lake.

IMPROVEMENT OF WEIR

CONSTRUCTION OF HUME PIPE CULVERTS

3.3.5 Plantation of Fruit Bearing Trees.

Many fruit bearing trees such as jamun, neem, Singapore cherry, etc., have been planted along the bunds as well as throughout the nature park area to feed birds.

3.4 Community Based Eco Tourism

Communities have been actively involved in the management, protection and conservation of the sanctuary and tourism related activities. At present there are two Eco-Development Committees (EDC) formed. The revenue from tourism is being utilized for managing the sanctuary along with livelihood improvement of the community.

The Sanctuary is open for visitors throughout the year and tourists are permitted within the Sanctuary on payment of stipulated entry fee. Presently, on an average 20,000 tourists visit Vellode Bird Sanctuary annually. The best season to visit the Sanctuary is October-February. Several migratory water birds comes to the Sanctuary in December-January.

Sanctuary's location has great tourism potential, as there is no other Bird Sanctuary in the region. It has become an ideal spot for birding. The Sanctuary offers ample opportunity for tourists. Keeping this in view it is necessary to develop basic infrastructure to provide facilities to the tourists. But care should be taken to limit the buildup area of the Sanctuary to give more importance for conservation.

This Sanctuary offers the following tourism activities to attract tourists.

1. Watch towers and elevated bund around the wetland for birding.
2. A steel watch tower is located on the northern part of the Sanctuary and a cement watch tower is located near Karuppuswamy kovil.
3. Mini interpretation center and theatre serve the purpose of eco-awareness/education.
4. Information boards have been put up in the Sanctuary park area on water birds.
5. Binoculars and Spotting Scope are available for the visitors at Sanctuary parking facility for 2 and 4 wheelers are available for visitors.
6. People can walk easily in trails on elevated bund which provides a good view for bird watching in Sanctuary boundary lines around 2.5kms.
7. Other facilities like refreshing rooms, resting benches are available for tourists,
8. Mini bridges inside the sanctuary offer aesthetic view.

9. Butterfly park on the fringe of walking trail boasts a number of species.
10. The toilets facilities are available for both genders though inadequate.
11. Enhanced Canteen and eco-shop facility to be open shortly.
12. Clean Drinking water facilities available in the premises.

The Sanctuary doesn't have any accommodation facilities. It is also not a part of any organized ecotourism initiative. Increased facilities at Sanctuary will attract more number of tourists.

3.5 Research, monitoring and training

3.5.1 Research

There is no permanent Research Assistant to conduct research on management subjects which is highly warranted for the Sanctuary. However, permission is accorded to willing scientists and research scholars to carry out research on long term/short term/consultancy works in the Sanctuary. The Bird documentation started in Vellode Bird Sanctuary since 2000 onwards by the Tamil Nadu Forest Department and with the help of experts from Bombay Natural History Society (BNHS), Salim Ali Center for Ornithology and Natural History (SACON) - Coimbatore, NGOs, local Bird watchers and enthusiasts from Erode district. Census of water bird is being carried out as per fund availability every year. During the year 2006-2007 a research study was undertaken to study the bird population, density, behavior including breeding. The Bird monitoring and analysis were done during Jan 2020 and Jan 2021 and the results tabulated in the Annexure-II. Approximately about 150 species are recorded in various seasons which include water and land birds are listed in Annexure X and XI.

The forest department engages with the academic institutions for carrying out research studies. Every year students visits the Sanctuary from various colleges and participate in water bird census. Apart from this the Forest Department conducts awareness programs in Schools and colleges. The permission is accorded to willing scientists and colleges for carrying out research. Census of water bird is conducted seasonally as per financial allotments. The practice of assessing daily water bird count during migratory season was introduced since the declaration of Sanctuary. In the year 2013 permission was given to 'Care Earth' to prepare the report of "Wetland Action Plan" under Tamil Nadu Biodiversity Conservation and Greening Project (TBGP) Scheme.

The study of "Enhancement of Aquatic and Peripheral Habitats in Vellode Bird Sanctuary" during the period Feb-2015 and March-2017 by Dr. R. Sundara Raju IFS, Biodiversity Conservation

Expert and reports on “The Aquatic Vegetation” and “Bird Diversity and Abundance” on Vellode Bird Sanctuary were carried out under TBGP Scheme.

3.5.2 Monitoring

The practice of monitoring water birds during migratory season was introduced since 2013. Wetland Action Plan study (2013-2018) for Vellode Bird Sanctuary was conducted under Tamil Nadu Biodiversity Conservation and Greening Project on 2013-14 and 2018-19. The reports submitted by Dr.R.Gopalan and Dr.S.Sambooranam are available viz. 1.“Report of Bird Diversity and Abundance” - Monitor Bird Diversity and Abundance (TBGP - 1.1.1.5.) and 2.“Report of The Aquatic Vegetation” - Monitor/Document Aquatic Vegetation (TBGP – 1.1.1.4.) in Vellode Bird Sanctuary 2019.

All the information collected on hydrology is mainly focused on water use for irrigation or flood control. The baseline data and information is absent or grossly inadequate. Inventorization, assessment of hydrological processes, biodiversity and socio-economic aspects are critical to management planning and robust baseline information needs to be developed.

3.5.3 Training

Training programs are pre-requisite for the field staffs and Eco Tourism staffs for efficient management of resources. Currently working staffs in the Sanctuary haven’t undergone any training in Ornithology other than usual skills for patrolling and sanctuary protection.

3.6 Eco systems, Habitats and Wildlife Conservation Strategies and their Evaluation

Residential and Migratory water birds are the main Avi-fauna of the Sanctuary. Their visit to the Sanctuary depends on the availability of water in the tank. The receipt of water and quantum depend on seepage from Lower Bhavani Project. Often delayed release of water or release of inadequate quantity affects the bird arrival into Sanctuary. When water in the Sanctuary tank is not sufficient, they visit nearby agricultural fields for feeding. Engaging Anti-Poaching Watchers for protecting the birds outside of the Sanctuary area during peak months is highly essential. Every year necessary action is being taken for the removal of the invasive weeds.


Spot Billed Duck

Reducing the prolific growth of exotic aquatic plant species and also mitigating proliferation of introduced invasive fish species (eg: Tilapia sp and African Giant Catfish) should be the focus for managing Invasive Alien Species.

Based on the information it is possible to identify preferred nesting habitats, which vary among species and can be categorized into 4 main types:

A. Marshes where floating nests are built in floating vegetation on water.

B. Reed beds and tall grasses.

C. Trees and bushes.

D. On the ground around streams.

3.7 Administrative setup

The existing administrative set up of the Vellode Bird Sanctuary is as follows:

District Forest Officer	Erode Forest Division
Forest Range Officer	Erode Range
Spl. Duty Forester (1)	Vellode Bird Sanctuary (Erode HQ)
Forest Guard (1) Spl. Duty Guard (1)	Vellode Bird Sanctuary (Vellode HQ)
Forest Watcher (1)	Vellode Bird Sanctuary (Vellode HQ)
Anti-poaching Watchers, (2)	Vellode Bird Sanctuary (Vellode HQ)

3.8 Communication

Previously because of its small size, no dedicated or separate communication system was prevalent in the Sanctuary. Presently the staffs are using **t**heir personal mobiles for their field works and it is working well. A new dedicated communication system need to be developed due to increase in the eco-tourism activities.

3.9 Summary of Threats

Six villages with approximately 4,000 human populations surround the lake. Agriculture is the main occupation of the people of these villages and they greatly depend on the lake for irrigation, cattle grazing etc. At present major threats are being faced from conflicts with irrigation in surrounding areas, siltation, poaching, weed invasion*(Ipomoea* Sp. and *Prosopis juliflora)*, cattle grazing and agricultural pollution. Various interventions are being carried out for reducing/mitigating the threat factors on the water birds and habitat conservation measures are adopted for sustainability of the lake .

3.9.1 Siltation

During the rainy season the eroded soil from their catchments get washed into the lake. This siltation reduces the water holding capacity of the lake. Siltation is a serious problem which results in low water depth and thereby facilitating the invasion of weed patches. So the lake must be desilted

periodically and periodical weed removal. Such a step will increase the irrigation potential of the lake and improve the ecology of the water birds habitat.

3.9.2 Conflicts with irrigation

The water discharge from the sluice is being used for irrigation purposes by the surrounding villagers. Every year the farmers in Vellode Periyakulam Eri Ayacut area cultivate paddy. In the Ayacut area the maintenance of channels are very poor, which causes loss of water. This injudicious and callous use of the lake's water for irrigation reduces the water level of the lake often to levels detrimental to the water birds. Such an action results in conflicts of interests between locals, conservationists and Forest Department officials. Agricultural lands adjacent to the Vellode Bird Sanctuary acts as potential foraging ground for wide variety of water birds. So, a compromising formula that caters to the needs of both the farmers and the birds needs to be devised by organizing awareness campaigns and workshops in this regard.

PLATE:17 BIRDS FEEDING IN FRINGE FARMLANDS

3.9.3 Poaching

Poaching of birds in the Sanctuary area is being controlled by the staff. Engaging more staff and Anti-Poaching Watchers will cater to poaching issues outside the Sanctuary.

3.9.4 Weed invasion

Two invasive alien species mentioned elsewhere have been identified as the most critical detrimental factor in the conservation of Vellode Bird Sanctuary and these are,

(1) *Prosopis juliflora* (Semaikaruvel) and

(2) *Clarias gariepinnus* (African giant cat fish).

The *Prosopis juliflora* (weed) invasion is very high in the lake area. The *Prosopis juliflora* (Velikaruvel) invasion can change the water quality and reduced the primary production and nutrient

cycle. But its significance as nesting and roosting site for birds offsets the negative impact. So, the uncontrolled growth of the species is regularly monitored and controlled by manual removal. In addition this, selective removal of cat fish is also carried out.

3.9.5 Cattle grazing

The lake periphery is used by surrounding villagers for cattle grazing especially during summer. This intensive cattle grazing could result in breaking the nutrient cycle of the lake. The local people are being educated through sensitization programs to control this threat.

3.9.6 Conservation issues

Six villages with 4,000 and more human populations surround the lake. Agriculture is the main occupation of the people of these villages and they greatly depend on the lake for irrigation, cattle grazing etc. Various kinds of threats such as cattle grazing, fuelwood collection, encroachment, siltation, weed invasion and pollution are existent.

CHAPTER – IV

THE PROTECTED AREA AND THE INTERFACE LAND USE SITUATION

4.1. The existing situation in the zone of influence

There is no village inside the Sanctuary but there are 6 villages in close proximity to the Birds Sanctuary (3 km radius). These villages have a human population of about 3,500 to 3750 and a livestock population of about 3,250 comprising of goats, bulls, cows and buffaloes. The total cultivated area in these villages is about 800 acres. The human population in the villages comprises largely of agriculturists and agricultural laborers. Paddy, Sugarcane, Turmeric, Maize and Coconut are the main crops of these areas. Before 2005 paddy was the predominant crop of these areas.

Population density trends indicate that Karukkangattu valasu of Perundurai taluk and V.Mettupalayam of Vadamugam vellode recorded the maximum number of households while the least population density was observed in Semmandapalayam.

Major livelihood categories are agriculture and livestock rearing in all villages. 308 households were found to be Below Poverty Line (BPL) and the number of households BPL was more in Thachangarai vazhi village, which highlights the need to focus on the BPL households in Thachangarai vazhi.

The landscape is strictly agrarian, and it is no surprise that the economy of all the villages is completely dependent on agriculture. As with many other parts of the country, due to a multitude of external and internal factors, agriculture has not been very lucrative in recent times. Low detrimental factors are non-ecological, and largely to do with non-availability of labour, erratic markets and pricing and decreasing yields. Despite the decline in the profitability of agriculture, no external migration is reported, which is in tune with the profile of the district. Although literacy level is low among people above 30 years; all children are educated as elementary school and primary school are present in Semmendapalayam and Vadamugam Vellode villages.

The maximum income level was recorded in V.Metupalayam as it supported more agriculture in comparison to other villages. Lowest income groups of farmers were present in Thatchangarai Vazhi village. In all the villages, the major livelihood categories are agriculture and livestock rearing. There are ten women self-help groups in the villages around the Sanctuary. The self-help group sells flowers and do small businesses availing micro-finance from government for their economic stabilization and to provide their children with better education.

The villages around the Sanctuary are completely dependent on farming mainly during monsoon or when the water is available from the Lower Bhavani Channel. They also use bore wells and open wells for irrigation. Every individual holds at least two acres of land. There are 300 small

farmers, 205 medium farmers and 95 large farmers. Agriculture is mainly rain-fed and intensive cultivation is not done here owing to non-availability of water. During fallow season the lands are left for grazing. People opt well-irrigation for cultivation throughout the year. The soil is fertile and three different soil types including alluvial soil, red soil and clay soil are found here. Major crops such as paddy, sugarcane and maize are cultivated during monsoon season. When the water from Lower Bhavani channel is released, minor crops such as ragi, tapioca, vegetables, greens, and banana are cultivated. The net sown area is around 728 ha. No post-harvest practices typical to the landscape are practiced.

PLATE:18 – PADDY CULTIVATION IN THE ADJOINING VILLAGES

Fertilizers such as DAP, Potash, NPK, Urea, and other organic fertilizers such as neem cake, cow dung are used for cultivation. Pesticides such as organochlorine and organophosphate are being used. No pesticide contamination in the Sanctuary has been recorded till date, but there are chances for birds getting affected as considerable number of birds tend to depend on agricultural fields in nearby villages for feeding. No incidents of bird mortality or bird flu have been reported so far. Fish mass mortality had been recorded earlier which has been attributed to the increase in BOD level (Eutrophication) in water and not due to the toxicity or disease. Forest Department in collaboration with the Fisheries department test the water status regularly.

From the date of declaration of the area as Birds Sanctuary the fishing lease by the PWD authorities was discontinued. Earlier sporadic incidents of illegal fishing had been reported from the area. Presently, fishing activity has been completely stopped and monitored in the Sanctuary.

4.2 Land use – Land Cover change in the VBS Landscape

The study of Land Use and Land Cover Change is known to have a significant bearing on the management of protected entities like 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 programme

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

The study of land use land cover change around VBS reveals certain Interesting patterns:

- A large part of the landscape continues to be agrarian; with intermittent low density human habitations.
- Major crops are paddy, sugar cane and turmeric, all of which are known as "water demanding" crops, indicating bountiful availability of freshwater. The presence of large tracts of coconut reiterates this fact.
- For agronomic reasons, the practice of cultivation is extensive.
- In recent times, the intermediate form of agriculture viz. a shift to cultivating horticultural crops is becoming part of the system largely due to non-availability of labour.
- Of concern is the conversion of lands to gated communities notably on the Western side of the VBS; which is preceded by letting large tracts of land to remain fallow for extended periods.
- The continuation of agriculture, especially of food crops such as paddy is critical for assuring food stocks to the birds.
- Local interactions with communities endorse the pattern discerned in the study; for instance changes have been reported over the last decade in land use over a 5 km radius by the farmers; agricultural land is being diverted for real estate development. Changes have also been noted in cropping pattern, wherein, sugarcane has been replaced by paddy and paddy has been replaced by banana all of which have a bearing on the sustenance of the birds in the landscape. As the agriculture in the villages around the Birds Sanctuary is seasonal and cyclic, cattle-rearing supports the livelihood of villagers.
- Poultry and aquaculture projects are absent in the vicinity. Though previously practiced, hunting, cutting of trees, collection of medicinal plants, grass, etc., no longer continues after notification of the area as a Sanctuary. An issue strongly articulated by the local farmers is the conflict with peafowl as their population has multiplied manifold and stated to raid their crops.

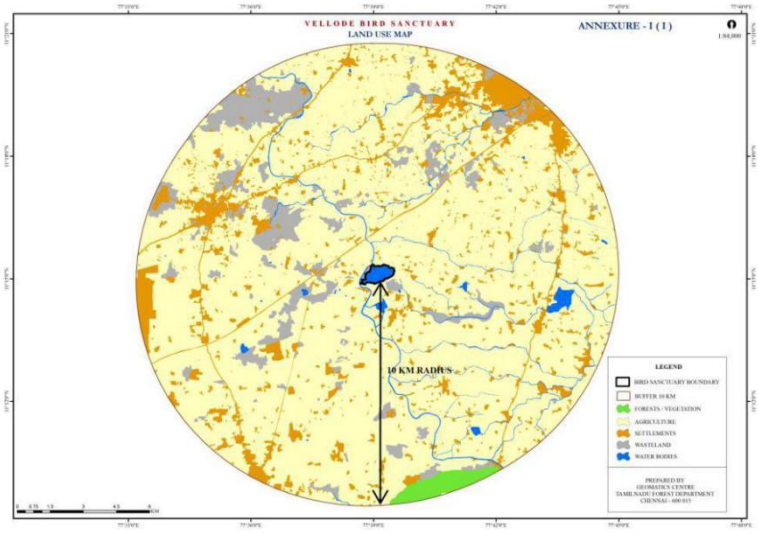


PLATE:19 LAND USE MAP OF VELLODE BIRD SANCTUARY

The following strategies are recommended through consultation with local communities:-

1. Need to invest attention towards the issue of human-peafowl conflict.
2. Regulation in terms of land conversion around a 5 km zone of the VBS needs to be considered.
3. In view of the fact that the landscape is dominated by high yielding, water demanding crops, measures like incentive for organic farming and strictly regulated use of chemical additives into agriculture needs to be introduced.
4. Traditional agronomic practices, preferably on the lines of Low External Input for sustainable agriculture need to be revived through training programs.
5. Providing incentives/subsidy for promoting organic cultivation amongst the farmers around the Sanctuary area.
6. Fetching the manure obtained from the organic farming and producing manures which can be sold through EDC to promote income generation.

PART – II

CHAPTER – V

VISION, MISSION AND OBJECTIVES

5.1 Vision

To manage the Vellode Bird Sanctuary as a critical breeding habitat for the large wetland birds of India, in addition to providing opportunities for local people, naturalists and visitors from other parts of the state and country, to appreciate and learn about nature and its components and evolve as a hub of conservation education in Erode district.

5.2 Mission

To conserve, protect, restore and sustain the wetland of vellode for enhancing the biodiversity values for the benefit of local communities and future generations and to promote the ecotourism practices.

The guiding principles for the management of Vellode Bird Sanctuary are summarized as below:

a. The forests and wildlife cannot be protected without meaningful cooperation of the people and therefore thrust is on partnership with shared objectives.

b. Participation of local people in villages around the Sanctuary will be ensured by involving them in decision making leading to better solutions and enhanced cooperation through Eco Development Committees (EDC). The best scientific input in making decisions is to select the most appropriate technologies in the management of resources.
c. In a developing country the issue of conflict between development and conservation is natural and we strive to achieve a balance professionally.

5.3 Objectives of Management

1. To nurture adequate protection to the migratory and local birds that visits the Sanctuary and to carry out habitat improvement and restoration activities for providing maximum opportunity to the birds for feeding, breeding and roosting.
2. To undertake ecological, social and interface assessment of the Sanctuary and its surroundings and to effectively bring about change in farming pattern of the surrounding villages from inorganic to organic for augmenting favorable agro habitat for birds.

3. To promote low impact sustainable ecotourism with the participation from local community and create awareness on bird conservation.
4. To elicit public participation for effective management and maintenance of the protected area through participatory decision making and adoption of best eco-development models evolving proper benefit sharing mechanism with the fringe villagers.
5. To equip and upgrade the protected area as upscale conservation education center with state of the art facilities and trained staff.

5.4 Problems and Strategies in achieving the objectives

SL. NO	OBJECTIVES	PROBLEMS IN ACHIEVING OBJECTIVES	STRATEGIES TO ACHIEVE OBJECTIVES
1	To protect the visiting migratory and local birds, their habitat improvement and restoration.	● Hunting of the birds. ● Unorganized and unauthorized entry into the Sanctuary area through the porous borders, accumulation of waste, etc., ● Invasion of Weeds and Alien species. ● Lack of separate water inlet causing periodic drying up of tank leading to death of fish.	● Patrolling and perambulation of the Sanctuary as well as adjoining agricultural fields by field staff and Anti-poaching watchers. ● Removal of invasive species at regular interval. ● Implantation of dead trees over mounds. ● To create new water inlet from LBP channel for ensuring perennial water source to the Sanctuary.
2	To promote low impact sustainable eco-tourism for awareness creation within buffer zone of the Sanctuary	Lack of awareness regarding the importance of wetlands and birds as an ecological indicator.	● Conducting sensitization programs to nearby villagers and educational institutions involving NGOs and industries as a part of environmental corporate social responsibility. ● Involvement of public volunteers in bird counting, census activities, etc., ● Conservation education for public through Interpretation and Learning center, bird watching exercises, nature trials, creation of website etc., with active involvement of local people.
3	To promote eco-development activities in the fringe villages and	Dependence of local people on the bird's habitat is often seen through occasional trespass for grazing and cultivation activities	Strengthening the existing Eco-development committees (EDC), eliciting people participation in management and creating livelihood

	reducing the dependence on bird habitats.	in the surrounding areas.	opportunities.
4	To bring about change in farming pattern of the surrounding villages for augmenting favorable agro habitat for birds	The land use changes from paddy cultivation to sugarcane, banana and real estate developments will adversely affect the feeding grounds for the birds in the Sanctuary.	Providing awareness to the farmers in the surrounding areas to shift towards organic cultivation practices and importance of feeding grounds for birds.
5	Capacity of to improve capacity of the staff for efficient Protective Area management.	Inadequate capacity of field staff	Equip the field staff with recent advanced field techniques, GPS and improved habitat management practices through adequate training.
6.	To carry out researches to decide on management interventions.	Lack of research findings, inadequate data availability on birds population and health of the habitat.	● Scientific biodiversity estimation; Prophylactic field veterinary care; ● Preventive disease control operations in and around the Sanctuary.

CHAPTER – VI

THE STRATEGIES

6.1 Introduction

Management strategies will always carry some element of artificiality. There is hence a risk that a strategy might at times become completely artificial and run counter to the theme of "**naturalness**". Therefore, **ameliorative strategies**, for improvement of the habitat conducive to birds are proposed along with **aesthetic, economic, environmental, or ecological considerations** and as "**near natural**" as possible.

6.2 Forestry Vs. Wildlife management

Forestry and wildlife management **need not be antagonistic.** The prescriptions made by the forestry have the potential to change forest conditions and therefore wildlife habitats in a variety of ways and are potent tools to **maintain or alter wildlife habitats**. Therefore they only support the cause of wildlife conservation in the division and are in consonance with stand objectives. To achieve the objectives, the following prescriptions are made herein.

6.3 Boundaries

The 77.185 Ha of Vellode Bird Sanctuary was created under sub-section (1) of Section 26A of the Wildlife (Protection) Act, 1972 (Central Act 53 of 1972) in G.O. Ms. No. 44, Environment and Forests (FR V) Department, dated 29.2.2000 and it was published in Tamil Nadu Gazette on 22.3.2000 in Page Nos. 150 and 151 and hence came into being as a Birds Sanctuary with effect from the date of publication (i.e.) 22.3.2000.

6.3.1 Consolidation of Boundaries

At present chain link fencing covers only certain portions of the sanctuary. Fencing the entire boundaries of the sanctuary has been proposed to protect it from encroachment. In the long run a protection wall along the boundary may ensure foolproof protection.

6.4 Zonation

Zone is a specific management category and it's not necessarily marked on the ground. Because of its small size, Vellode Sanctuary does not need any zonation. However, for the purpose of management planning differentiation of the area into core and buffer zone has been proposed.

6.4.1 Core Zone

The entire water spread area confined within the earthen bund of the lake excluding the bund is designated as the core zone of the Sanctuary. The core zone which is the habitat abundantly used by the birds is well protected from all sorts of human threats. Habitat restoration and habitat improvement programs are being carried out in the core zone for the scientific management of the Sanctuary. Research works are permitted in the core zone with the prior approval of the Chief Wildlife Warden.

6.4.2 Buffer zone

The extent between the earthen bund (inclusive of the bund) and the Sanctuary boundary is proposed as buffer zone. In this zone certain development activities like Eco tourism and Eco development activities will be actively promoted.

6.4.3 Eco-sensitive Zone

Eco-Sensitive Zones (ESZs) or Ecologically Fragile Areas (EFAs) are areas notified by The Ministry of Environment, Forest and Climate Change (MoEF&CC) around Protected Areas, National Parks and Wildlife Sanctuaries. The purpose of declaring ESZs is to create some kind of "shock absorbers" to the protected areas by regulating and managing the activities around such areas. In consonance with government of India guidelines, the district committee headed by District Collector has resolved to declare the eco-sensitive zone all around the Sanctuary up to a distance of 500metres from the boundary and notified by the government on 22.05.2020. All the activities in this zone will be regulated and monitored as per extant guidelines and rules. (Included as separate Chapter – VII)

CHAPTER - VII

ECO-SENSITIVE ZONE

S.O. 1615(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.3434(E) dated the 20th September, 2019, 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;

The copies of the Gazette containing the said draft notification of Eco-sensitive zone were made available to the public on the 23rd September, 2019 and finally notified on 22.05.2020; Attached in Annexure

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

AND WHEREAS, Vellode Bird Sanctuary is spread over an area of 0.77185 square kilometres and situated in between 110 15'16.7'' N latitude, 770 39'22.9'' E longitude Vadamugam Vellode village, Periyakulam lake, Perundurai Taluk of Erode district in the State of Tamil Nadu;

AND WHEREAS, it is necessary to conserve and protect the area, the extent and boundaries of Vellode Bird Sanctuary which are specified in paragraph 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 of uniform 0.5 kilometre around the boundary of Vellode Bird Sanctuary, in Erode district in the State of Tamil Nadu as the Eco-sensitive Zone (hereafter in this notification referred to as the Eco-sensitive Zone) details of which are as under, namely:

7.1 Extent and boundaries of Eco-sensitive Zone. —

The Eco-sensitive Zone shall be to an extent of uniform 0.5 kilometre around the boundary of Vellode Bird Sanctuary and the area of the Eco-sensitive Zone is 3.40 square kilometres. The boundary description of Vellode Bird Sanctuary and its Eco-sensitive Zone is appended in Annexure-I.

- The maps of the Vellode Bird Sanctuary demarcating Eco-sensitive Zone along with boundary details and latitudes and longitude are appended as **Annexure-IIA, Annexure-IIB, Annexure-IIC** and **Annexure-IID.**
- Lists of Geo-coordinates of the boundary of Vellode Bird Sanctuary and Eco-sensitive Zone are given in Table A and Table B of **Annexure III.**
- The list of villages falling in the proposed Eco-sensitive Zone along with their Geo-coordinates at prominent points is appended as **Annexure-IV.**

7.2 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 in consultation with many departments of the State Government in such a 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 not impose any restriction on the approved existing land use but provide for their improvement and restoration.

(4) 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.

(5) The Zonal Master Plan shall be co-terminus with the Regional Development Plan.

(6) 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.

(7) Measures to be taken by the State Government.- The State Government shall take measures for regulating Land use, Natural water bodies, Eco-tourism, natural heritage, man-made sites, noise pollution, air pollution, discharge of effluents, solid waste, bio-medical waste, plastic waste, construction and demolition waste, e-waste management, vehicular traffic, vehicular pollution, industrial units and protection of hill slopes for giving effect to the provisions of this notification.

1. 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 there under 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

2. 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 for three years or till the re-constitution of the new Committee by the State Government, comprising of the following, namely:-

i	District Collector, Erode	Chairman, ex officio
ii	Project Dire tor, DRDA, Erode	Member
iii	Revenue Divisional Officer, Erode	Member
iv	A representative of Non-Governmental Organization working in the field of wildlife conservation to be nominated by the State Government	Member
v	An expert in Biodiversity nominated by the State Government	Member
vi	one expert in Ecology from reputed institution or university of the State	Member
vi	District Environmental Engineer, Tamil Nadu State Pollution Control Board, Erode	Member
vii	Tahsildar, Perundurai	Member
viii	A representative from State Public Works Department	Member
ix	District Forest Officer, Erode Forest Division	Member-Secretary

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

4. The provisions of this notification shall be subject to the orders, if any passed or to be passed by the Hon'b1e Supreme Court of India or High Court or the National Green Tribunal.

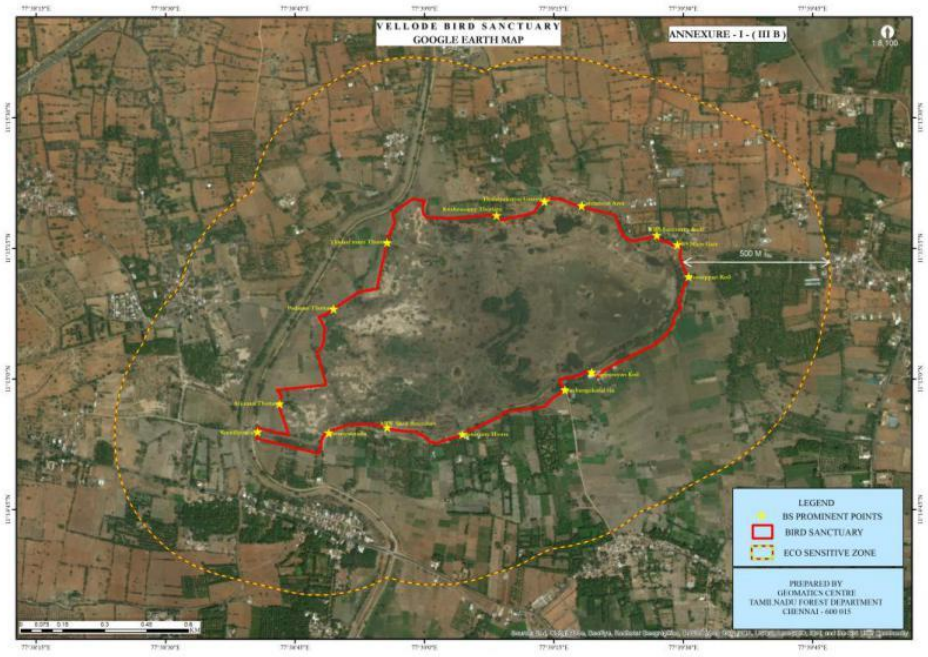


PLATE:20 - BOUNDARY MARKING USING GOOGLE IMAGERY

CHAPTER - VIII

WILDLIFE PROTECTION

8.1 Introduction

The provisions of the Wildlife Protection Act of 1972 as amended from time to time, are applicable in the entire jurisdiction and any violation of this Act are dealt severely. Wildlife Act will be strictly enforced to prevent all illicit activities. Wildlife awareness campaigns will be vigorously propagated.

8.2 Cultural aspects of wetlands/ landscape

The wetland does not have any known traditional or customary systems of water conservation, nor does the landscape have any sacred groves or species. However, in the immediate periphery of the Sanctuary, there is an old Karupparayan temple which is the major place of worship and gathering of the surrounding villagers. The devotees are known to offer prayers seeking good monsoon which fills the tank and supports sustainable irrigation. It is noteworthy to highlight the support received from the villagers by refraining from bursting crackers during festive seasons in the interest of conservation of the birds.

8.3 Habitat improvement

The following are the steps that have been identified for habitat improvement in the Sanctuary:

8.3.1 Control of invasive species

Control of invasive species is a priority for sustainable habitat management to sustain water holding capacity, enhancement of water depth and water spread area. Invasive flora comprise *Prosopis juliflora, Parthenium* (Terrestrial*), Ipomea (*Aquatic) whereas African Giant cat fish and Tilapia forms major invasive fish fauna. Integrated control measures using mechanical and biological methods need to be adopted.

PLATE:21 REMOVAL OF PROSOPIS

8.3.2 Habitat Improvement and Management

There no presence of concrete forest type. However, we need to develop and maintain vegetation that will host/home for many land and water birds.

Tree planting such as fruit bearing trees like *Terminalia arjuna*, *Neolamarckia cadamba*, Ficus sps, etc around the tanks can be taken up in the periodical manner. Since predominant vegetation of babul plantation was taken up way back in 1983. It is almost nearings its first rotation, there is possibility of drying up such trees. Hence birds may lose perching/nesting sites. Active plantation of Babul inside and around the tanks need to be taken.

8.3.3 Moderating the water level of the tank.

As the phrase says too much of water may also cause loss of biodiversity and species diversity. Vellode Bird Sanctuary is used by lot of water birds and land birds. Different variety of birds will prefer different habitat. Habitat management should not be uniform throughout the sanctuary. Mounds should be created for birds that prefer marshy conditions, shallow depths and semi dry conditions. This can be achieved by creating permanent source of water to feed the tank and regulating the water levels by discharging as per the standard operating procedure to make the Sanctuary a multi species friendly bird habitat.

8.3.4 Creation of mounds and strengthening of bunds

Bunds have been created all over the periphery of the lake which need periodical repairing and strengthening. Moreover additional perching space for birds will be created by forming earthen mounds with dead trees planted on it. Existing mounds are found to be utilized by larger birds e.g. White Ibis, Asian Openbill, Grey heron and Indian Cormorant for nesting and roosting. The open waters between the mounds were found to be inhabited by ducks and coots.

PLATE:22 MOUND FORMATION AT VELLODE

STRENGTHENING OF EXISTING BUNDS

8.3.5 Desiltation

Desilting operation has to be planned in such a way that no desilting is carried out in regular water stagnation areas which are demarcated as ‘no desilting area’ in the map. The modus operandi for desilting and disposal of excavated silt should be in consultation and approval of an ad-hoc committee comprising officials and representatives from all EDCs.

Comparative Google Imagery

PLATE: 23 VELLODE BIRD SANCTUARY - BEFORE FORMING BUND (2017)

PLATE: 24 VELLODE BIRD SANCTUARY – AFTER BUND FORMATION (2019)

8.3.6 Improving peripheral and nearby terrestrial habitats for birds:

Sanctuary is surrounded by agricultural fields. The birds that frequently visit the agro fields e.g. Ibis, Storks, and Egrets occasionally ends in conflict with farmers. Hence, to minimize the conflict between farmers and the management, more fruit bearing trees will be planted on the peripheral area of the Sanctuary e.g – banyan, ficus, jamun etc., Moreover farmers could be assisted and advised to resort to organic methods of farming to have a healthy environment for birds and other wildlife.

8.4 Formation of Phumdi and other structures:

Floating mats, locally called as phumdis, are heterogeneous mass of soil, vegetation and organic matter at various stages of deposition. These phumdis play an important role in the ecological process and functions of the lake ecosystem. Hence these phumdi / perching sites imitating natural looks are proposed for providing birds with roosting and nesting purposes thereby enhancing the habitat for the birds visiting Vellode Bird Sanctuary along with monitoring adaptability and its assessment in this wetland. Hence formation of phumdi and other structures that support in sustaining avian population is being proposed.

8.5 Control of illegal fishing:

Fishing is totally banned within the Sanctuary area. Day and night patrolling is done to book cases of illegal fishing. Foot and boat patrolling are resorted to.

8.5 Control of illegal grazing:

Since, the Sanctuary is surrounded by villages and irrigated fields, during summer cattle are driven inside the Sanctuary for meeting their requirements of grazing and drinking water. To check this chain link fencing is proposed at all sensitive points along the boundary.

8.6 Fire Protection:

Around the water body of the Sanctuary there exist deciduous scrub forest with lot of grass, it is vulnerable for fire. Hence, clearing of fire lines along the boundary and other vulnerable places are to be taken up in advance during summer. Fire watchers from EDC's are being engaged to put off any accidental fire.

8.7 Other aspects

1. Planting Vetiver (*Chrysopogon zizanniodes*) and soil binding grasses to strengthen the bund.
2. Immunization of livestock on the fringe villages of Sanctuary area.

3. CCTV camera facilities with all supporting equipment's will ensure round the clock surveillance of the Sanctuary premises.

CHAPTER – IX

ECO-TOURISM, INTERPRETATION AND CONSERVATION EDUCATION

9.1 Introduction

Eco tourism is defined as "**responsible travel to natural areas that conserves the environment and improves the well-being of local communities, and involves interpretation and education**" (TIES, 2015). Education is meant to be inclusive of both staff and guests. The term is broadly defined as low impact travel to endangered and often undisturbed locations. Because of the intricate nature of interface between nature and human beings, nature conservation must entail participation of' people as a non-negotiable component. Such tourism is low impact, educational, and protects the environment, while directly benefiting the economic growth of the local communities. The concept of the ecotourism can very well fit into the Vellode Bird Sanctuary which is surrounded by agricultural villages which depends on this lake for irrigation.

9.2 Identification of the zone

Eco Tourism activities will be restricted to the buffer zone alone (refer 6.5.2) and the core zone will be kept inviolate.

9.3 Proposed Eco Tourism Activities and Infrastructure Requirements

Multipronged approach will be kept in employing all the suitable New Eco Tourism Activities and in improvement and augmentation of the existing activities. These will include Eco Cycle/ Battery Car Ride, Bird Walk, Nature walk, Nature photography, Interpretation Centre visit, documentary film show, Nature camps, Night Camping, visitors Eco Friendly Shelters, Eco Canteen, Eco-Shops etc. These components will be suitably tailored into the ecotourism activity in Vellode Bird Sanctuary which will be managed by the EDC members. Sanctuary will have a van to support the students from schools and colleges as an exposure visit to the Sanctuary. The existing unused buildings will be put to use as eco-canteen, eco shops, ticket counters, night shelter etc. However infrastructure has to be created for full-fledged interpretation center, dormitory, library, etc.

PHOTO POINT AT VELLODE BIRD SANCTUARY

9.4 Capacity building of local communities and staffs.

The proposed community based ecotourism model is a space where we link local community. The Eco-Tourism activities will be linked with the existing EDCs. Capacity- building of selected EDC youth has to be under taken to run successful and sustainable ecotourism practice. The trained EDC personnel will be engaged as field guides/bird watchers to run the show. In order to achieve the objectives, the selected EDC members as well as managerial staff need to communicate the wide ranging ecosystem services and biodiversity values to the visitors for which adequate training is a prerequisite.

9.5 Revenue from Community Based Eco-tourism

The funds generated from all such Community based ecotourism activities will be utilized proportionately for upkeep of the sanctuary/conservation activities and for socio-economic upliftment of the local communities by creating community assets and facilities and by providing alternate livelihood options for the participating villages.

9.6 Presence of other Popular Tourist Destinations within 50 km radius of the proposed Eco Tourism Site.

1) Chennimalai Temple*:* Distance from Vellode is 12 kms and is on the way to Kangayam town.
2) Kodumanal archaeological site: Distance from Vellode is 20 Kms.
3) Erode archaeological Government Museum: Distance from Vellode is 12 Kms.
4) Sivan Malai Temple*:* Distance from Vellode is 30 Kms and is on the way to Kangayam town.
5) Bhavani Kuduthurai Temple: Distance from Vellode 30 kms. Cauvery and Bhavani River's junction point.
6) Sathyamangalam Tiger Reserve: It is another protected area for conservation of wildlife (65 km).

9.7 Infrastructure development

9.7.1 Interpretation Centre and Dormitory

The existing small interpretation center is inadequate to engage the flow of visitors and hence creation of a new interpretation center with facilities of audio visual aids is planned to attract more tourists with most relevant information pertaining to the Vellode Bird Sanctuary and its ecological importance. In addition dormitory facility is also proposed at the sanctuary to accommodate small groups attending nature camps which would facilitate bird watching at the early morning hours and will be appreciated.

9.7.2 Watch tower

There are three watch towers existing within the sanctuary created in the past for the purpose of bird watching. However they seldom serve the purpose owing to less height and over grown trees in the immediate vicinity. They could be put to alternative use as information and interpretation centers. A new watch tower with height of 15m is so proposed which would facilitate the bird's eye view of the sanctuary. This may serve the twin purpose of bird watching and protection.

9.7.3 Nature trails

To enhance the aesthetic and experiential quotient of the Sanctuary, two nature trail paths have been laid over the tank bund for 700 m & 600 m. This has been done by strengthening the bund, clearing bushes and erecting interpretation signboards along the trail. A few ecologically friendly benches can be provided on the tank bund for the tourists to sit and watch birds. A few Interpretation boards have been erected at strategic places explaining the importance of the Sanctuary and its birds. There is a need for further extension of the nature trail tracks and erection of few more interpretation boards,

PLATE:26 DEVELOPMENT OF NATURE TRAIL

9.7.4 Learning Garden/ Nature Park

It will be worthwhile to develop a comprehensive learning

garden for identification of birds using sounds and modules. This learning center is to be established in the Sanctuary for the benefit of tourists and field staffs.

NATURE PARK IN THE PREMISE

9.7.5 Theatre

A multimedia theatre facility was created in tourism zone of VBS. Theatre can accommodate 20 people at a time, which can showcase various Eco-awareness videos taken in sanctuary and other forest areas to educate the tourist.

9.7.6 Accommodation

Two suits are available in VBS tourist zone to provide accommodation to help the visitors for early morning trial around the Sanctuary.

9.7.7 Canteen and Eco Shop

Canteen – community run canteen, refreshments are procured from local cottage industries sold for public and the proceeds revenue realized in remitted to Chellappampalayam.

9.7.8 Butterfly Park

Creation of butterfly park is been initiated at a small level where we spotted butterflies and its host plant interactions which increased in population over a period of time that motivated us in taking up initiative towards cherishing such butterflies with its environment . Followed by which we

9.8 Conservation Education

Students from nearby schools and colleges are regularly visiting the Sanctuary during the season as part of environmental education program. Environmental education activities are not in full swing right now owing to various constraints. However a planned community linked eco-tourism model in place will rectify this defect.

The following strategies will be helpful in achieving awareness among the public:

- For satisfying the information needs of the visitors to the Sanctuary, pamphlets and posters needs to be prepared.
- Students and local people must be made aware about the importance of wildlife conservation.
- Eco education camps have to be organized in the Sanctuary to impart conservation education to these target groups.
- An Eco-Education package can be developed aiming at plethora of education institutions that are prevalent in Erode and neighboring districts.

9.8.1 Publicity awareness

To spread the message of conservation of wildlife, publicity material like brochures, hand bills should be prepared and distributed freely for the tourists, general public, school children and the people surrounding villages to create awareness regarding the importance of conserving wildlife. Education awareness materials will be preferably in local languages to improve the level of awareness of the stakeholders and general public with regards to the value of wetlands and other habitats and the needs of water birds.

PLATE: 25 AWARENESS PROGRAM FOR SCHOOLS

9.8.2 Interpret and display research findings in multimedia for the benefit of the visitors (Tamil & English)

Every year students visit the Sanctuary from various colleges and schools on educational and recreational visits. Many of them participate in water bird census too. The management is keen on preparing a video documentary on Vellode water birds to be presented with good multimedia hardware to the visitors in interpretation center. Further, interactive programs like quiz, bird calls identification etc., will be organized for the benefit of the visitors to create awareness and incite love for the birds and Vellode Bird Sanctuary.

9.7.3 Eco-awareness

Among the various management activities, eco-awareness program on various themes for various stakeholders would be a crucial management step for conservation of the Vellode Bird Sanctuary. The stakeholders include the various line departments and agencies, educational and research institutes, local population, tourists and NGOs. Separately and laterally combined eco-awareness programs and nature camps for each of them will be conducted to evolve and promote better management strategies for the Sanctuary.

The activities associated with eco-awareness programs are:

1. Building a cadre of trained eco-guides to assist the visitors.
2. Generating Publicity materials for identification of Birds (Nesting/ Roosting/ Feeding sites) critical resources.
3. Providing library support with field guides and reference materials.
4. Creating state of the art interpretation center.

Following facilities can be made available in the Sanctuary

1. Developing the website for the Sanctuary to promote Eco-tourism.
2. Constructing Interpretation center, Dormitory, public convenience block and cafeteria.
3. Providing nature camp facilities for Students from schools and colleges.
4. Improvisation of pergola and water towers.
5. Battery operated vehicles for the differently abled.
6. To view the entire Sanctuary area, high steel watch tower (15m) and Bi-cycle rides can be promoted.

7. Providing Library facilities for the educational institution visitors like students from schools, colleges, staffs, etc.
8. To attract more visitors, advertisement boards about the Sanctuary to be placed in and around the city.
9. Encouraging research works and creating mini lab for the evaluation and management works in the Sanctuary.

Introducing an ecotourism vehicle to support school and college students to visit and explore the Sanctuary.

9.8.4 Social Media Engagement and Awareness Creation:

You tube, Facebook, Instagram, twitter and other social media an exclusive accounts in the name of Vellode Bird Sanctuary should be opened for better awareness creation and engagement with naturalists and youngsters.

9.8.5 Website Creation and Documentation

The main intention of website creation is to provide information on residential and migratory Avian visiting the Sanctuary to the public along with general information's and functions of the sanctuary. Existence of this Sanctuary is still remains unknown to the public. Hence in order to outstretch the visiting numbers of the sanctuary this item is proposed. Attracting tourists apart from Tamil Nadu and fascinating students from all parts of the nation would be an added benefit in this regard. In addition, documentation of all works along with Avian population and its habitats will be recorded regularly on an yearly basis which would properly stored for future references.

9.8.6 Implementation of Digital Ticketing

Main objective of introducing digital ticketing is to completely cut down the usage of paper and to promote e-ticketing. Items required for accomplishing this task would require a high specification computer, SMS package, cloud storage, handheld tablet, ticket designing, module creation, etc.,. Hence introduction of this modern technology would attract more visitors towards the Sanctuary premises is being proposed.

CHAPTER – X

ECO-DEVELOPMENT

10.1 Introduction

Eco development means development that is ecologically, socially and economically sustainable. It involves village level planning to achieve sustainable development of local resources. For Eco development currently two Eco Development Committee's (EDCs) have been formed in the Sanctuary.

10.2 Objectives

i) To involve the fringe villagers in and around the Sanctuary, in Protected Area planning, protection and conservation by educating them on appropriate action oriented awareness programs with values of the protected area.

ii) To develop site specific eco-development micro-plans with the participation of the villagers.

iii) To develop alternate sources of bio-mass and income, to divert pressure on the protected area while strengthening the economic condition of the villagers.

iv) Wean villagers away from the traditional dependence of protected area by providing alternate sources of livelihood and training.

10.3 Specific Issues

The local population is under the impression that consequent to the declaration of Vellode Bird Sanctuary, they have been deprived of certain rights.

i. Traditionally the villagers surrounding the Sanctuary have been dependant on the protected area for fuel-wood, small timber, fishing and grazing.
ii. With no grazing grounds in the villages, they were mainly dependent on the lake during summer to graze their animals.
iii. It will be very difficult to ensure protection and better management of the Sanctuary without winning the confidence of local people. It is essential that their active co-operation is sought, maintained and sustained in the management of Vellode Bird Sanctuary.

10.4 Broad Strategies

Dependence of villagers for small timber, fuel wood, grazing grounds on Protected Area has to be addressed properly. Vellode Bird Sanctuary is surrounded by 6 villages with nearly 22,500

populations. Currently two eco-development committees are involved in the management of Sanctuary affairs, namely V.Mettupalayam EDC and Chellapampalayam EDC. However they are in a dormant stage and needs rejuvenation for which strengthening measures are planned.

Following activities are planned as a strategy for lessening the dependency of neighbouring/fringe village community on lake area and ensure cordial relationship with them.

1. To take up certain entry point activities as per enlisted/prioritized felt needs in the region. The entry point activities will include providing threshing floor, improvement of approach road, construction of bus shelters and community halls, etc. as desired by the local people.
2. To draw up a goal oriented micro plan enlisting priorities of the community and management priorities of the sanctuary.
3. To address basic needs of the community by providing alternate income generation options.
4. To discourage the farmers from applying chemical fertilizers/pesticides on their farms which are feeding grounds for many birds and actively promote organic farming.

5. To supply fruit yielding, medicinal and agroforestry species of plants to attain self-sustainability and generate income in course of time.
6. Encouraging stall feeding of cattle through introduction of improved fodder varieties for milch cattle so as to reduce the grazing pressure on the protected area.

10.5 Monitoring and evaluation:

The monitoring of eco-development activities are important to achieve the annual physical and financial targets until the beneficiaries reach a position of maintaining and continuing the programmed activities. The evaluation of the impact of eco-development on the Sanctuary and surrounding areas will be given importance in next level of planning.

The people in the adjoining villages should be empowered and involved in monitoring and evaluation activities.

10.6 Participatory Management:

The general principles of Participatory Management are agreed to be the following:-

- Incentives, both monetized and non-monetized, for local people's involvement and prudent use of resources are essential and everyone must benefit in the long term.

- Local people benefits from participatory management arrangements through the maintenance of sustainable livelihoods, including activities such as: sustainable farming, recreational uses, ecotourism and availability of water source for domestic and irrigation purposes.
- Other benefits of participatory management for local and indigenous people include:
  - maintaining spiritual and cultural values associated with a wetland;
  - more equitable access to wetland resources;
  - increased local capacity and empowerment;
  - reduced conflicts among stakeholders; and
  - maintaining ecosystem functions (e.g., flood control, improved water quality, etc.).

CHAPTER – XI

RESEARCH, MONITORING AND TRAINING

11.1 Research

Conservation research is a tool for a better understanding of the Vellode Bird Sanctuary and for its sustainable management. Here the forest department is not fully occupational with conservation research and hence there are no in-house researchers due to lack of resources. Currently linkages are being established with research organizations such as WII, WWF, SACON, Care Earth, BNHS, SEWA, Arulagam, NGARDS, Local NGOs and Local Colleges which needs to be strengthened. A fully equipped micro level laboratory or research station with Researcher is need of the hour. In addition Water inflows and outflows of the lake should be estimated with the help of hydrological experts for individual assessment of water holding capacity of Vellode lake during north-east and south-west monsoon seasons.


GREEN BEE EATER

PLATE: 27 DIBBLING PALM SEEDS ALONG THE BUND

11.2 OBJECTIVES

The following are the objectives identified:

i) To better understand the resources and their inter links to develop quantitative population estimates for selected key species, their current distribution and habitat use.

ii) To establish and maintain a checklist of all flora, fauna, migratory and resident birds species for assessing their current abundance, distribution, and functional relationship among biotic communities.

iii) To identify priority research and monitoring topics and conduct scientific assessments and evaluations that would support the development of Sanctuary's management program.

iv) To measure and assess the ecosystem health of the Sanctuary with various parameters representing/ indicating aquatic and terrestrial biodiversity.

v) To create a micro laboratory facility at Vellode Bird Sanctuary along with engaging a full time technical assistant for continuous monitoring.

11.3 Topics for Research:

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

i) Assessment of bio-diversity of lesser known and functionally important groups.

ii) Microbial ecology of lentic/lotic aquatic bodies.

iii) Survey of fodder availability for resident and migratory birds.

iv) Studies on diversity and population of fishes

v) Floristic diversity and regeneration studies.

vi) Communicable disease and health monitoring in both migratory birds and surrounding village and commercial poultry birds.

vii) Eco-tourism strategy, visitor management interpretation centre, publicity and propaganda.

viii) Assessment of bird diversity in the Sanctuary.

ix) Impact of use of chemical fertilizers in the adjacent farm land.

x) Habitat degradation and infestation of exotic weeds.

xi) Migration and seasonal movement patterns of birds.

xii) Carrying capacity of the Sanctuary for migratory birds.

xii) Monitoring prey population in the forage grounds.

xiii) Investigate how changing sizes and patterns of distinct wetlands affect their use by a variety of wetland birds.

xiii) Assessing the surrounding wetlands for bird supporting habitat.

xiv) Research activities on Aquatic Ecology.

xv) Assessment of Freshwater Fishes

11.4 Requirement of Staffs:

11.4.1 Biologist

Biologist to be appointed for the Sanctuary to **a**ssist the District Forest Officer in all technical matters in conducting short research, report generation writing research reports, coordination with research institutes, organizing census operations, GIS mapping, data collection, documentation and analysis, monitoring the ecosystem, conducting eco-awareness programs, etc.,

11.4.2 One Field Assistant

One Field assistant possessing knowledge of plants, ecology of birds, etc has to be engaged for primary data collection for research who will also assist the biologist.

PLATE: 28 NCC STUDENTS VISIT TO VELLODE BIRD SANCTUARY

11.5 Monitoring

The monitoring exercise should be done by the field staff with support from biologist, field assistant with reference to various development activities in the bird habitats. Ideally monitoring and evaluation works to be done by conducting a mechanism of feedback dialogues with field staff and local communities regarding the works done on various management activities.

PLATE: 29 EXAMINATION OF WORKS BY CHIEF CONSERVATOR OF FOREST AND FIELD DIRECTOR, SATHYAMANGALAM TIGER RESERVE WITH DISTRICT COLLECTOR, ERODE

An integrated monitoring mechanism involving all stakeholders such as local people, panchayats, Public Welfare Department, Pollution control board, NGO's, Students, researchers, etc., for assisting field staffs is needed for effective foolproof management.

11.5.1 Monitor/ Document biodiversity:

Documentation of the flora (including aquatic vegetation) and fauna (Birds, Mammals, Reptiles, Fishes, Amphibians, Dragonflies, Damselflies, Butterflies etc.,) of the Sanctuary will be validated by interacting with experts through the photographs taken from the Sanctuary. The check list will be made by the biologist engaged by the department.

11.5.2 Monitor bird diversity and abundance

Annual census of water birds is carried out in the month of December-February when species diversity and population are high. The latest census methodology and techniques will be adopted.

11.5.3 Surveillance against contagious diseases (e.g. bird flu)

The staff concerned will be provided basic training in routine checking for outbreaks of avian flu and any other disease transmitted by birds. However, the local veterinary services will be engaged to periodically assess the health and hygiene of the wetland and a register for this will be maintained by the management. Quarantine measures as and when advocated during disease outbreaks will be scrupulously complied.

11.5.4 Weather Station

Monitoring the weather, downloading the information in a database and interpreting the findings will provide inputs for management. In addition to a hand held weather station, a permanent rain gauge station will be set up and used for the analysis. Frequent maintenance will also be undertaken.

11.6 Training

Like research and monitoring, training is a neglected area, though it is critical in improving capability of the staffs who play major role in management of the sanctuary. There is no specific training schedule available for the staff as part of management courses to conserve the bird habitats. Conduction of short-term training modules (3 to 5days) not only for staffs but also all the stakeholders related to species identification, habitat management, eco-friendly practices, public relations, wetland conservation and management Rules, data enumeration, scientific observation of species movement, health of the sanctuary, etc,. needs to be regularized. It is worthwhile if study tours are conducted for the staff of Protected Area (PA) to visit other PAs within and outside the State to learn how other PAs are managed.

PLATE:30 TRAINING MODULE FOR FORESTRY STUDENTS

The following skill development is needed for the front line staff

1. Annual refresher course on census methods and techniques.

2. Capacity building training to the interested front line staff to various Wildlife Institutions.

3. Exposure visit for front line staff and wildlife managers.

4. Preparation and supply of bird and vegetation identification book of this Sanctuary.

5. Promising and willing staff can be deputed for training to Bombay Natural History Society for intensive training on bird identification and related works.

CHAPTER – XII

ORGANIZATION AND ADMINISTRATION

12. 1 Structure and Responsibilities

The Vellode Bird Sanctuary is under the administrative control of the Erode Forest Division and is directly managed by the Erode Forest Range Officer under the guidance of the District Forest Officer, Erode District. The field level administration is vested with the Forest Range Officer, Erode (HQ-Erode) who is assisted by Forester, Forest Guards and Watchers besides Anti-Poaching Watchers. The Sanctuary falls under the Erode Circle with the Chief Conservator of Forests and Field Director of Satyamangalam Tiger Reserve, Erode as the administrative head for the Vellode Bird Sanctuary.

The existing administrative set up of the Vellode Bird Sanctuary is as follows:

District Forest Officer	Erode Forest Division
Forest Range Officer	Erode Range
Section Forester (1) Spl. Duty Forester (1)	Vellode Bird Sanctuary (Chennimalai HQ) Vellode Bird Sanctuary (Erode HQ)
Forest Guard (1) Spl. Duty Guard (1)	Vellode Bird Sanctuary (Vellode HQ)
Forest Watcher (1)	Vellode Bird Sanctuary (Vellode HQ)
Anti-Poaching Watchers, (2)	Vellode Bird Sanctuary (Vellode HQ)

12.2 Additional support staff, staff amenities and allied infrastructure

The birds visiting here move to the neighbouring agricultural fields for feeding and some birds nest and perch in the six adjoining tanks near the Sanctuary. Hence, it is necessary to employ more support staff to give protection to these birds. At present two Forest Guards and one Forest Watcher are employed in the Sanctuary. Besides two anti-poaching watchers are available to support the uniformed staff. This strength is insufficient to control the crowd during holidays, check illicit grazing, fishing, but also to conduct awareness programs, to carry out developmental activities etc. Hence it is proposed to engage two additional APWs and interpretation center personnel's are also in need to manage the infrastructures.

12.3 Patrolling paths and allied infrastructure:

Patrolling is highly essential to ensure better protection. On foot patrolling is the only possibility inside the Sanctuary. For effective and speedy movements, patrolling paths will also be formed all around the Sanctuary. Hence there is a proposal for two motorcycles to be provided to patrolling staffs with 25 litre of petrol per month for each motor cycle. The patrolling paths will be maintained annually and would double up as fire lines.

CHAPTER-XIII

BUDGET

13.1Fund Flow

The funds for carrying out the prescription of this Management Plan will be secured through Centrally Sponsored /Shared Schemes of the Government of India which are likely to be continued.

13.2 Financial Forecasting:

The financial projections have been made for the listed management prescriptions which are to be carried out during the plan period. The Budget requirements for the proposed activities are given in phased manner (annual) in this chapter.

The financial implications of the Management Plan for the period 2021-2022 to 2025-2026 are made as follows.

BUDGET

Sl.No	Name of the Component	2021-22			2022-23			2023-24			2024-25			2025-26		
		Qty.	Per	Amount (In Lakh)	Qty.	Per	Amount (In Lakh)	Qty.	Per	Amount (In Lakh)	Qty.	Per	Amount (In Lakh)	Qty.	Per	Amount (In Lakh)
I	PROTECTION and CONSERVATION															
1	Erection of chain link fencing in the sensitive areas of the Sanctuary along the periphery wherever required	1000 RM	2000/M	20	1000 RM	2000/M	20	1000 RM	2000/M	20	1000 RM	2500/M	25	1000 RM	2500/M	25
2	Maintenance of chain link fencing in the sensitive area of the Sanctuary along the periphery	1000 RM	250/M	2.5	1000 RM	250/M	2.5	1000 RM	250/M	2.5	1000 RM	300/M	3	1000 RM	300/M	3
3	Strengthening of existing bund with revetment.	1000m^3	2750/ m3	27.5	1000m^3	2750/m3	27.5	1000m^3	3000/m^3	30	1000m^3	3000/m^3	30	1000m^3	3300/m^3	33
4	Maintenance of revetments along the bunds in the sanctuary	LS	-	2.00	LS	-	6	LS	-	6	LS	-	6	LS	-	6
5	Clearing and laying fire line along the sensitive boundary of the Sanctuary.	3 Km	6000/ Km	0.18	3 Km	6000/ Km	0.18	3 Km	6600/ Km	0.2	3 Km	7260/ Km	0.22	3 Km	7986/ Km	0.24
6	Deepening, strengthening and maintenance of existing water spread areas within the bund.	20,000 m^3	100/m^3	20	20,000 m^3	100/m^3	20	20,000 m^3	100/m^3	20	20000 M^3	110/m^3	22	20000m^3	120/m^3	24
7	Engaging Anti-poaching watchers in the sanctuary.	2 Nos.	12,500/ Each/ Month	3.00	4 Nos.	12,500/ Each/ Month	6	4 Nos.	12,500/ Each / Month	6	4 Nos.	12,500/ Each/ Month	6	4 Nos.	12,500/ Each/ Month	6
8	Providing field dress and hunter shoes for Anti-poaching watchers	2 Nos	3000/ Each/ Year	0.06	4 Nos	5000/ Each/ Year	0.2	4 Nos	6000/ Each/ Year	0.24	4 Nos	7000/ Each/ Year	0.28	4 Nos	7000/ Each/ Year	0.28
9	Providing rations for Anti-poaching watchers	4 Nos	3000/Month	1.44	4 Nos	3000/Month	1.44	4 Nos	3000/Month	1.44	4 Nos	3000/Month	1.44	4 Nos	3000/ Month	1.44
10	Purchase of two wheelers for patrolling	-	-	-	2 Nos	1,00,000/No	2	-	-	-	-	-	-	-	-	-
11	Maintenance and fuel charges for two wheelers	-	-	-	2 Nos	3000/Month/1 No	0.72	2 Nos	3000/Month/1 No	0.72	2 Nos	3000/Month/1 No	0.72	2 Nos	3000/Month/1 No	0.72
12	CCTV Surveillance camera facilities with all supporting equipments and its	-	-	-	LS	-	5	-	-	-	LS	-	0.5	LS	-	0.75

	maintenance cost in upcoming years														
13	Maintenance of CCTV camera	-	-	-	-	-	-	LS	-	1	LS	-	1	LS	-	1
14	Fuel and maintenance charges for the existing patrolling boat.	LS	-	0.5	LS	-	0.5	LS	-	0.5	LS	-	0.5	LS	-	0.5
15	Rewards for informants	-	-	-	LS	-	0.3	LS	-	0.3	LS	-	0.3	LS	-	0.3
16	Strengthening of Eco Development Committee (EDC)	2 Nos	50,000/No	1	2 Nos	50,000/No	1	2 Nos	50,000/No	1	2 Nos	50,000/No	1	2 Nos	50,000/No	1
17	Engaging scavenger and sweeper for upkeep of the sanctuary premises (EDC support)	2 Nos	2000/ per person / month	0.48	2 Nos	2000/ per person / month	0.48	2 Nos	2000/ per person / month	0.48	2 Nos	2000/ per person / month	0.48	2 Nos	2000/ per person / month	0.48
18	Bestow heronries by wealthy site components like planting tree saplings and habitats required.	-	-	-	LS		1.00	LS		1.50	LS		1.75	LS		2.00
19	Procurement of Bicycle for field staffs for patrolling activities inside the sanctuary	-	-	-	6 Nos	0.075	0.45	-	-	-	-	-	-	-	-	
SUB - TOTAL				**78.66**			**95.27**			**91.88**			**100.19**			**105.71**

II	**HABITAT MANAGEMENT**														
1	Planting Vetiver (*Chrysopogon zizanniodes*) and other native grasses for slope stabilization and improving soil binding capacity.	LS	-	1	LS	-	1.5	LS	-	1.5	LS	-	1.75	LS	-	1.75
2	Removal of invasive alien species like *Prosopis juliflora*,etc	5 Ha	20,000/Ha	1	5 Ha	20,000/Ha	1	5 Ha	20,000/Ha	1.3	7 Ha	22,000/Ha	1.54	7 Ha	25,000/Ha	1.75
3	Periodical removal of invasive alien species *Clarias gariepinnus*- African giant cat fish (selective removal) from the pond	LS	-	0.25	LS	-	0.25	LS	-	0.25	LS	-	0.25	LS	-	0.25
4	Purchase, transport and release of fish fingerlings in a cyclic pattern to increase the feed potential of birds.	LS	-	0.5	LS	-	0.6	LS	-	0.8	LS	-	0.8	LS	-	0.8

5	Formation of mound and implanting dead trees for roosting and nesting.	-	-	-	-	-	-	1no	-	8	1 no	-	10	1 no	-	10
6	Formation of bamboo rafts for large birds	LS	-	0.5	LS	-	0.75	LS	-	1	LS		1.25	LS		1.5
7	Erection of artificial wood and steel posts for roosting of larger birds (like Pelicans) in the boundary	LS	-	2	LS	-	3	LS	-	3.5	LS		4	LS		5
8	Clearing weeds and maintenance of nature trail frequently 2 to 3 times in a year	-	LS	1	-	LS	1	-	LS	1.5	-	LS	1.5	-	LS	2
9	Immunization of livestock on the fringe villages of sanctuary area	-	-	-	6 Nos	20,000/Nos	1.2	6 Nos	20,000/Nos	1.5	6 Nos	20,000/Nos	1.5	6 Nos	20,000/Nos	1.75
10	Raising nursery and plantation of fruit bearing trees/bamboo within the sanctuary.	200 No	250/No	0.5	200 No	250/No	0.5	200 No	250/No	0.75	200 No	250/No	1	200 No	250/No	1
11	Planting fruit bearing seedlings (tall seedlings) in weed cleared area	100	150	0.15	100	175	0.175	100	200	0.2	100	200	0.2	100	200	0.25
12	Raising and supply (in demand & free) of multipurpose fruit bearing tree seedlings to villagers	1000 seedlings	75	0.75	LS	50,000	0.5	LS	50,000	0.5	LS	50,000	1	LS	50,000	1
13	Improving the water quality through frequent aeration	-	-	-	LS	-	2	LS	-	2	LS	-	2.5	LS	-	2.5
14	Upkeep of micro level Butterfly garden within Sanctuary premises	LS	75,000	0.75	LS	50,000	0.5	LS	50,000	0.5	LS	50,000	0.5	LS	50,000	0.5
15	Formation of phumdi models as perching sites	-	-	-	3 Nos	0.30	0.90	-	-	-	5 Nos	0.50	2.50	-	-	-
SUB - TOTAL				**8.4**			**13.875**			**23.3**			**30.29**			**30.05**

III	**INFRASTRUCTURE**															
1	Construction of new Interpretation centre with library.	-	-	-	-	-	-	1 No	-	45	-	-	-	-	-	-
2	Constructing meeting hall and dormitory for male, female.	-	-	-	1 No (double stored)	-	40	-	-	-	1 No (double stored)	-	40	-	-	-

3	Procurement of essential furniture for the interpretation centre and dormitory.	-	-	-	LS	-	30	-	-	-	-	-	-	LS	-	30
4	Maintenance of interpretation centre and dormitory	-	-	-	-	-	-	LS	-	2	LS	-	2.5	LS	-	3
5	Construction of steel observation tower (15m height) for monitoring the birds and Sanctuary activities.	-	-	-	1 No	-	25	-	-	-	-	-	-	-	-	-
6	Maintenance of steel observation tower	-	-	-	-	-	-	LS	-	1	LS	-	1	LS	-	1
7	Improvement and maintenance of compound and strengthening (plastering) RR walls	500 RM	-	10	500 RM	-	10	LS	-	5.5	LS	-	5.5	LS	-	6
8	Construction of Staff quarters	-	-	-	-	-	-	1 No	-	30	-	-	-	-	-	-
9	Maintenance of Staff quarters	-	-	-	-	-	-	-	-	-	LS	-	3	LS	-	3
10	Provisions for solar power.	LS	-	2	LS	-	2	LS	-	2.5	LS	-	2.5	LS	-	3
11	Maintenance of Solar equipment's in the Sanctuary	-	-	-	LS	-	2	LS	-	2.5	LS	-	2.5	LS	-	3.5
12	Construction of public convenience and providing sanitary and water facility, electricity, etc.,	-	-	-	2 No	6,00,000/per	12	-	-	-	-	-	-	-	-	-
13	Maintenance of public convenience and sanitary facilities.	LS	-	0.40	LS	-	0.75	LS	-	0.75	LS	-	1	LS	-	1
14	Improvement of old existing canteen building to function as Sanctuary office cum control room.	LS		3.5												
15	Periodic maintenance and repairs of existing buildings in the sanctuary.	LS	-	3	LS	-	3	LS	-	3.5	LS	-	3.5	LS	-	3.5
16	Laying paver block along the walking trail over the bund with dry rubble packing	1000 RM	3500/ RM	35	500 RM	3500/ RM	17.5	500 RM	3500/ RM	17.5	500 RM	3500/ RM	17.5	500 RM	4000/ RM	20
17	Maintenance of nature trail/paver blocks	LS	-	2	LS	-	3	LS	-	3	LS	-	3	LS	-	4
18	Frequent maintenance of water inlet channels, sluice/shutter in the sanctuary	-	LS	0.5	-	LS	0.5	-	LS	0.5	-	LS	0.5	-	LS	0.5
19	Erection of handrails along the bunds wherever necessary, to ensure the	100RM	2000/RM	2.00	500RM	2500/RM	12.5	500RM	2500/RM	12.5	500RM	2500/RM	12.5	500RM	2500/RM	12.5

	safety of the visitors															
20	Maintenance of anti-poaching shed	LS	-	2	LS	-	2	LS	-	2.5	LS	-	2.5	LS	-	2.75
21	Maintenance of steel watchtower	LS	-	0.5	-	-	-	LS	-	0.5	LS	-	0.5	LS	-	0.5
				60.9			**160.25**			**129.25**			**98**			**94.25**

IV	**AWARENESS**														
1	Conducting Eco-Camps to students, villagers, press etc.,	5 Nos	0.10	0.50	15 camps	10,000/camp	1.5	20 camps	10,000/camp	2	25 camps	10,000/camp	2.5	30 camps	10,000/camp	3
2	Purchase of books and materials for library	LS	-	2	LS	-	2	LS	-	0.3	LS	-	0.3	LS	-	0.5
3	Purchase of materials for Interpretation Centre (Bird models, information books, information boards, etc.,)	-	-	-	LS	-	20	-	-	-	LS	-	40	LS	-	2
4	Erection of signage and information boards in and around Sanctuary	5 nos	15,000/ no	0.75	2 Nos	50,000/No	2				2 Nos	50,000/No	2	4 Nos	50,000/No	2
5	Printing publicity materials like stickers, pamphlet, booklets, brochures, caps, T-shirts etc.,	LS	-	0.5	LS	-	2.5	LS	-	2	LS	-	2	LS	-	2.5
6	Purchase of camping materials like tent, sleeping bags and light etc.	-	-	-	LS	-	1.5	LS	-	1.5	LS	-	1	LS	-	1
7	Information brochures, documentation maintenance and advertisement	LS	-	0.5	LS	-	0.5	LS	-	1	LS	-	0.5	LS	-	1
8	Maintenance / Restoration of old information boards to create awareness among the public	LS	-	0.5	LS	-	1	LS	-	1	LS	-	1.5	LS	-	1.5
9	Promoting organic farming to the fringe villagers through awareness.	-	-	-	3 programs	-	0.3	3 programs	-	0.5	3 programs	-	0.6	3 programs	-	0.75
10	Preparing portable exhibit materials	-	-	-	LS	-	0.5	LS	-	1	LS	-	0.5	LS	-	1
11	Celebrating Wildlife days like world wetland day, environment day, etc.	4 Nos	0.15	0.6	LS	-	0.5	LS	-	0.5	LS	-	1	LS	-	1
12	Purchase of first aid medical kits for staffs & visitors	LS	-	0.1	LS	-	0.1	LS	-	0.2	LS	-	0.2	LS	-	0.2

				5.45			**32.4**			**10**			**52.1**			**16.45**

V	**CENSUS**															
1	Conducting periodical census from Oct to Mar.	LS	-	1	LS	-	1	LS	-	1.25	LS	-	1.25	LS	-	1.5
2	Periodical monitoring and Documentation of biodiversity in the sanctuary	LS	-	0.5	LS	-	0.5	LS	-	0.5	LS	-	0.5	LS	-	0.5
	Sub Total	-	-	**1.5**			**1.5**			**1.5**			**1.5**			**1.5**

VI	**RESEARCH & TRAINING**															
1	Engaging field guide/expert – 12 months	1 No	25000/ Month	3	1 No	26000/ Month	3.12	1 No	27000/ Month	3.24	1 No	28000/ Month	3.36	1 No	30000/ Month	3.6
2	Engaging Biologist / Research Assistant - 12 months	1 No	22000/Month	2.64	1 No	22000/Month	2.64	1 No	23000/Month	2.76	1 No	24000/Month	2.88	1 No	25000/Month	3
3	Construction of Micro laboratory for research works	-	-	-	-	-	-	-	-	-	1 No	-	10	-	-	
4	Organising technical trainings for staff, including purchase of field guide books, etc.,	LS	-	0.5	LS	-	1	LS	-	1	LS	-	1.5	LS	-	1.5
5	Ecological studies on water birds and land birds of Sanctuary	LS	-	1.00	LS	-	1.5	LS	-	1.5	LS	-	2	LS		2
6	Monitoring and assessing heronries	LS	-	1.00	LS	-	1.5	LS	-	1.5	LS	-	2	LS		2
7	Conducting Ecosystem health assessments	LS	-	1	LS	-	1	LS	-	1	LS	-	1	LS	-	1
8	Procurement of Drone and Camera traps to monitor and document wildlife and its activities in the sanctuary.	-	-	-	LS	-	5	-	-	-	-	-	-	-	-	-
9	Maintenance of Drone and Camera traps	-	-	-	-	-	-	LS	-	0.5	LS	-	0.5	LS	-	1
10	Procuring high specification computers with essential components like printer, table, etc.,	LS		2	LS		2	LS		0.5	LS		0.5	LS		0.5
11	Exposure visits to staffs, EDC members	LS		1	LS		1	LS		1	LS	-	1.25	LS	-	1.25

	and Green brigade team															
12	Engaging Green Brigade team outside the sanctuary area as part of EDC. (To prevent poaching outside the sanctuary)	4 Nos.	10,000	4.8	4 Nos.	10,000	4.8	4 Nos.	12,500/ Month	6	4 Nos.	12,500/ Month	6	4 Nos.	12,500/ Month	6
13	Conducting staff training including procuring of field guide books etc	LS	0.5	0.5	LS		0.75	LS		1.00	LS		1.00	LS		1.25
14	Procurement of High resolution Zoom camera for Wildlife photography				LS		3.00							LS		3.75
SUB - TOTAL				**17.44**			**27.31**			**20**			**31.99**			**26.85**

VII	**ECO TOURISM and PUBLICITY**															
1	Creating visitors resting places at important locations of the Sanctuary	LS	-	5	LS	-	5	LS	-	6	LS	-	6	LS	-	6
2	Establishment of cafeteria for the visitors including purchase of materials, etc.,	LS	-	3	-	-	-	LS	-	2	LS	-	2	LS	-	2.5
3	Corpus fund for Eco Development Committees - EDC	2	-	4	2	-	4	2	-	8	2	-	8	2	-	8
4	Facilitate Eco-education to school and college students to visit the Sanctuary.	-	-	-	1 (30 seat cap)	-	30	-	-	-	-	-	-	-	-	-
5	Maintenance and fuel charges	-	-	-	-	-	-	LS	-	5	LS	-	5	LS	-	6
6	Purchase of Eco friendly vehicle (Electric Car) with its supporting accessories	-	-	-	-	-	-	-	-	-	2 (Car)nos	-	30	-	-	-
7	Maintenance of Eco friendly vehicles	-	-	-	-	-	-	-	-	-	LS	-	2	LS	-	2
8	Exposure visits to staffs, EDC members and Green brigade team	LS		1	LS		1	LS		1	LS	-	1.5	LS	-	1.5
9	Generating Website for the Sanctuary & Frequent update and revisions in the website.	-	-	3	-	-	0.5	-	-	0.5	-	-	0.5	-	-	1
11	Preparation of management plan	-	-	-	-	-	-	-	-	-	-	-	-	LS	-	2
12	Showcasing of climate change Awareness exhibits inside the sanctuary	-	-	-	LS		2.500	LS	LS	2.000						

	premises														
13	Documentary film on VBS	-	-	-	LS		5.000						LS		5.000
14	Improvement of parking facilities for visitors / Tourists				LS		4.000	LS		2.000	LS		2.000	-	-	
15	Implementation of Digital Ticketing in VBS and its maintenance cost in the following years	-	-	-	LS		6.000	LS		0.750	LS		0.750	LS		1.000
16	Outreach activities in the PA and prepare special publications (Coffee table book)/ Short films, documentary etc.,	LS	LS	0.5	LS		2.500	LS		1.500	LS		1.500	LS		1.500
17	Maintenance / Restoration of old information boards to create awareness among the public				LS		1.000	LS		1.000	LS		1.000	LS		1.250
18	Printing expenses of pamphlets, brochures, etc.,	-	-	-	LS		1.000	LS		1.000	LS		1.000	LS		1.250
19	Creation of website for publicising and promoting Vellode Bird Sanctuary and improvising them in the following years	-	-	-	LS		3.000	LS		0.500	LS		0.600	LS		0.750
20	Contingencies and documentation	LS		0.65	LS		0.5	LS		0.5	LS		0.5	LS		0.5
SUB - TOTAL				**17.15**			**66**			**31.75**			**62.35**			**40.25**

ABSTRACT

Sl.no	**Component**	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	
1	Protection and Conservation	78.66	95.27	91.88	100.19	105.71	**471.71**
2	Habitat Management	8.4	13.875	23	30.29	30.05	**105.615**
3	Infrastructure	60.9	160.25	129.25	98	94.25	**542.65**
4	Awareness	5.45	32.4	10	52.1	16.45	**116.4**
5	Census	1.5	1.5	1.5	1.5	1.5	**7.5**
6	Research and Training	17.44	27.31	20	31.99	26.85	**123.59**
7	Eco tourism and Publicity	17.15	66	31.75	62.35	40.25	**217.5**
TOTAL		**189.5**	**396.605**	**307.38**	**376.42**	**315.06**	**1584.965**

13.3 RATIFICATION REPORT

The Ratification report shown below is for the period 2018 – 2019 to 2020-2021

2018 - 2019								
Sl. No	**Name of the scheme with G.O. and details of works**	**Physical**			**Financial (Rs.in lakhs)**			**Remarks**
		Target	**Achievement**	**%**	**Target**	**Achievement**	**%**	
Development of Vellode Bird Sanctuary Scheme ***(G.O. (D) No. 309 E & F (FR-5) dept., dated 01-11-2018)***								
	Non - Recurring Activities							
1	Planting of *aviphilic* species to enhance the aquatic vegetation	500 Nos.	500 Nos.	100%	0.500	0.500	100%	
	Recurring Activities							
2	Drilling new bore well with motor pump and electrification at periphery of the lake	1 no.	1 no.	100%	2.500	2.494	100%	Work completed
3	Engaging Anti-poaching watchers (Rs.10000 / no. / month)	2 Nos. / 12 months	2 Nos. / 10 months	83%	2.400	2.400	100%	
4	Street light facility to sanctuary boundary line (LED light with two pole)	4 nos.		0%	0.800	-	0%	
5	Annual Maintenance of rest room in the Sanctuary	LS		0%	0.250	-	0%	Tender completed and work order issued
6	Maintenance of Bird Watch Tower N 11.25440 E 077.66743	LS		0%	1.000		0%	
7	Renovation of canteen including procurring of new canteen materials	LS	LS	100%	1.000	1.000	100%	
8	Erection of signages and information boards in and around the sanctuary	5 Nos.	5 Nos.	100%	0.500	0.500	100%	
9	Purchase of Eco-camp materials (Tent, camp cots etc.,)	2 kits	2 kits	100%	1.000	1.000	100%	
10	Purchase of furniture for interpretation centre, watch tower and office	LS		0%	1.000	0.810	81%	Work under progress.
11	Conducting census	2 times	2 times	100%	0.600	0.600	100%	
12	Awareness Eco camp for school students, volunteers and public	2 camps	2 camps	100%	0.300	0.300	100%	
13	Purchase of Bird field guide books	LS	LS	100%	0.100	0.100	100%	
14	Conducting skill development training and exposure visit to field personnel	LS		0%	0.500		0%	

15	Providing uniform to antipoaching watchers and staff involved in protection (Rs.2000 / set)	2 sets	2 sets	100%	0.040	0.040	100%	
16	Creation of fibre models in outdoor interpretation centre (Rs. 30000 / no.)	4 Nos.	4 Nos.	100%	1.200	1.200	100%	
	VBS Scheme - Total				**13.690**	**10.944**	80%	
2019-20								
Sl. No	**Name of the scheme with G.O. and details of works**	**Physical**			**Financial (Rs.in lakhs)**			**Remarks**
		Target	**Achieve-ment**	**%**	**Target**		**G.O. %**	
Development of Vellode Bird Sanctuary Scheme ***(G.O. (D) No. 115 E & F (FR-5) dept., dated 08-05-2019)***								
	<u>Recurring Activities</u>							
1	Street light facility to sanctuary boundary line (LED light with two pole)	4 nos.	4 Nos	99%	0.799	0.793	99%	Work Completed
2	Annual Maintenance of rest room in the Sanctuary	LS		100%	0.250	0.250	100%	
3	Maintenance of Bird Watch Tower N 11.25440 E 077.66743	LS		100%	1.000	1.000	100%	Work Completed
4	Purchase of furniture for interpretation centre, watch tower and office	LS		100%	0.190	0.190	100%	
5	Conducting skill development training and exposure visit to field personnel	LS		100%	0.500	0.500	100%	
	VBS Scheme - Total			100%	**2.739**	**2.733**	100%	
'Vellode Bird Sanctuary' of Erode Forest Division (2019-20) Government of India, Ministry of E , F & Climate Change, Letter No: 13-22/2019 WL dated 30.10.2019								
1	Planting fruit bearing seedlings / sowing grass seeds in the open spaces / weed cleared areas	500 Nos	500Nos	100%	0.500	0.500	100%	Work Completed
2	Preparation of Management Plan	LS	Ls	100%	0.500	0.500	100%	
3	Release of Fish fingerlings to augment the feed base for the birds	3000 Nos	3000 Nos	100%	0.150	0.150	100%	Work Completed
4	Removal of Invasive species	5 ha	5 ha	100%	0.900	0.900	100%	
5	Formation of floating bamboo rafts as islands to create additional perching space for birds	3 Nos		0%	0.300	0.000	0%	2nd Instalment
6	Engaging Anti-poaching watchers (April 2019 to March 2020)	2.000	2 Nos	100%	2.400	2.400	100%	Work Completed
7	Uniform For Anti-poaching Watchers	2 set	2 set	100%	0.050	0.050	100%	

8	Provision for Sitting Bench to the Visitors (11°15'15.34"N , 77°39'26.43"E)	2 Nos	2 Nos	100%	0.500	0.500	100%	
9	Creation of Walking Trails over the bund (11°15'17.97"N , 77°39'21.99"E),(11°15'20.62"N , 77°39'14.37"E)	LS		100%	1.500	1.500	100%	
10	SS Handrail for providing safety to visitors and children along the bund (11°15'14.90"N, 77°39'24.53"E), (11°15'16.65"N, 77°39'22.82"E)	100 r m	100 rm	100%	2.000	2.000	100%	
11	Annual Maintenance of rest room (Men & Women toilets) in the sanctuary	LS		100%	0.300	0.300	100%	
12	Provision for LED Projectors with screen, Audio systems, Camera etc for imparting Eco education	LS		100%	1.000	1.000	100%	
13	Conducting Birds Census	2 Nos	2 Nos	100%	0.600	0.600	100%	Work Completed
14	Conducting training to identified EDC youth to serve as ECO guides including provision of uniform etc	LS		100%	0.500	0.500	100%	
15	Strengthening of EDCs	2 EDC		0%	1.000	0.000	0%	2nd Instalment
16	Production of exclusive documentary film on Vellode Bird Sanctuary for conservation education	LS		100%	0.500	0.500	100%	Work Completed
17	Celebration of Important Days and Creating awareness among the public on wetlands	LS		100%	0.250	0.250	100%	
18	Conducting Nature Camps for School and College students	2 Camp	1 camp	50%	0.300	0.150	50%	
19	Erection of Signage and Information Boards in and around the Sanctuary	5 Nos		0%	0.600	0.000	0%	2nd Instalment
20	Outreach activities in the PA and prepare special publication(books, booklet, brouches, handouts, flyers, pamplets, etc) short film for CMS COP	LS		0%	1.000	0.000	0%	
	Total				**14.850**	**11.800**	79%	

2020-21

Sl. No	**Name of the scheme with G.O. and details of works**	**Physical**			**Financial (Rs.in lakhs)**			**Remarks**
		Target	**Achieve-ment**	**%**	**Target**		**G.O. %**	
Integrated Development of Wildlife Habitats - Development of Vellode Bird Sanctuary (G.O.(D) No.38 E & F (FR.5) Dept dated: 02.02.2021)								
	Non- Recurring							
1	Planting fruit bearings / sowing grass seeds in the open spaces / weed cleared area	500 Nos	-	0%	0.500	0.00	0%	2nd installment fund awaited

2	Free supply of multipurpose fruit bearing tree seedlings to villagers	1000 Nos	-	0%	0.750	0.00	0%	
3	Procurement of Binoculars, Spoting Scope etc.,	LS	-	0%	1.000	0.00	0%	
	Non- Recurring TOTAL				**2.250**	**0.000**	0%	
	Recurring							
1	Release of Fish fingerlings to augment the feed base for the birds	3000 Nos	3000 Nos	100%	0.150	0.15	100%	work completed
2	Removal of Invasive Species of flora	5 Ha	-	0%	1.000	0.00	0%	2nd installment fund awaited
3	Engaging the Anti-poaching watchers (April 2020 to March 2021)	2 Nos / 12 months	2 Nos / 12 months	100%	3.000	3.00	100%	work completed
4	Uniform for Anti-poaching watchers	2 Sets	2 Sets	100%	0.060	0.00	0%	Work completed. 2nd installment fund awaited
5	Regular maintenance of sanctuary area by engaging Mazdoors	2 Nos / 12 months	2 Nos / 12 months	100%	1.620	1.077	66%	An amount of Rs 1.007 lakh has been utilized towards payment of wages to mazdoors (2 nos) for 8 months. Balance payment for the remaining months has been provided from the available funds in non-plan. Hence target achieved.
6	Provision of dustbin along the pathway	3 Nos	-	0%	0.450	0.00	0%	2nd installment fund awaited
7	Creation of walking trails over the bund	LS	LS	100%	1.500	1.50	100%	Work completed
8	Erection of Handrails for providing safety to visitors and children along the bund	100 RM	100 RM	100%	2.000	2.00	100%	
9	Erection of Signage and Information Boards in the Sanctuary	5 Nos	5 Nos	100%	0.75	0.00	0%	Work completed. 2nd installment awaited.
10	Annual Maintenance of rest room (Men & Women toilets) in the Sanctuary	LS	LS	100%	0.400	0.00	0%	Work completed. Fund awaited.
11	Improvement of Forest watcher quarters in Vellode Bird Sanctuary	LS	-	0%	1.000	0.00	0%	2nd installment fund awaited.
12	Conducting Birds census	LS	1 No	50%	0.600	0.30	50%	
13	Engaging Field Biologist cum nature education expert	1 No / 12 Months	1 No/ 10 months	83%	2.640	2.20	83%	An amount of Rs. 2.20 lakh has been provided for Biologist's wages from June 2020 to Mar 2021. Wages of Rs. 0.440 lakh for Apr 2020 and May 2020 has not been paid due to non-engagement of Biologist during those months (Covid-19 pandemic lock down). Hence target achieved.

14	Conducting training to identified EDC youth to serve as ECO guides including provisions of uniforms etc.,	LS	LS	100%	0.500	0.00	0%	Work completed. fund awaited.
15	Strengthening of EDCs i) V.Mettupalayam ii) Chelappampalayam	2 EDC	-	0%	1.000	0.00	0%	2nd installment fund awaited.
16	Conducting staff training including procuring of field guide books etc.,	LS	-	0%	0.500	0.00	0%	
17	Celebration of important days	4 Nos	4 Nos	100%	0.600	0.00	0%	Work completed. Fund awaited.
18	Conducting Nature Camps	5 Camps	-	0%	0.500	0.00	0%	2nd installment fund awaited
19	Erection of publicity boards in prominent public places within the district	2 Nos	-	0%	0.600	0.00	0%	
20	Documentation expenses	LS	LS	100%	0.500	0.00	0%	Work completed. Fund awaited.
VBS - GRAND TOTAL					**21.620**	**10.227**	47%	

CHAPTER – XIV

THE SCHEDULE OF OPERATIONS AND MISCELLANEOUS REGULATIONS

14.1 Disease Management

The Sanctuary is surrounded by villages of varying sizes. Each village has a number of domestic animals (mulch animals, stray cattle, goat, dogs and other poultry). With the movement of livestock inside the Birds Sanctuary, there is always a possibility for spreading of contagious diseases. The problem of disease spread maybe higher during the summer period from March to April when livestock is mostly dependent on Vellode Lake for foraging. Prompt reporting of an infectious animal disease or its symptoms in livestock population is crucial for wildlife management. Disease could spread rapidly to wild birds if not noticed in right time. In this context, immunization has been regular in practice for livestock belonging to the villages bordering the Vellode Bird Sanctuary. Nevertheless, people who own or keep livestock are responsible for their care and health.

PLATE:31 IMMUNIZATION CAMP FOR CATTLE IN FRINGE VILLAGES

The Sanctuary management has set a number of rules to monitor the health of kept animals with the local communities. These rules largely concern prevention, monitoring and control (PMC) of animal diseases. The PMC are being targeted by the field staff periodically as part of Sanctuary management. Early reaction is to carry out without delay the disease control activities needed to contain the outbreak and then to eliminate the disease and infection in the shortest possible time frame and in the most cost-effective way.

14.2 Vision: Wildlife Health and Strategies

Periodical vaccination for livestock shall be undertaken in the Birds Sanctuary by Veterinary Department Personnel (Vellode) every year, especially in the summer. The following contagious

diseases will be watched and identified in the livestock and poultry and immunization drugs should be provided with the help of forest department by organizing special camps in the surrounding villages.

14.3 Intervention

Various immunization components to be taken into account by the veterinary personnel and wildlife experts to prevent dissemination of diseases to water fowls in the tank.

1. Maintain proper hygiene in the vicinity of Sanctuary
2. More care and management in maintaining livestock during the dry spell of the year
3. Try to identify initial symptoms of diseases among domestic livestock
4. Care to be taken while purchasing new animals
5. Call for a veterinarian immediately for any suspected diseases in livestock.
6. Livestock drinking from contaminated rivers and streams may be avoided
7. Do not bury or burn died animals in the open, other than in exceptional circumstances

Awareness creation will lead to better management of livestock and will create most effective ways of eliminating disease from cattle. The main benefits of the awareness programme are: a) improved farm expansion b) improved farm sustainability c) better stock health and welfare and d) a farmer/veterinarian relationship ensured

14.4 Guidelines for the local communities/farmers

1. Set of important guidelines to be provided to the farmers about the up keeping of their livestock to prevent disease eruption and spread.
2. Some of the diseases spread rapidly during festive seasons when there will be overcrowd of visitors in the Sanctuary (example: bird flu). This is likely to affect the health of the wild birds. During this period of special event the forest department in close co-operation with animal husbandry will organize mass immunization programmes to prevent such spread.

14.5 A Pocket field guide for plan implementers

It is a field action document meant to be carried by all field personnel and therefore must be written with economy to the point. The guide is meant to present all technical strategy details with modalities of application. The field guide will have (i) a preamble to state its purpose and utility (ii) the objectives listed by their priority (iii) a map of administrative unit. (iv) the all-important section on strategy details and application. The field guide shall be prepared by the District Forest Officer and supplied to all staff concerned. Since the field guide is recommended as ***Vade mecum***, the District Forest Officer shall accordingly decide its size and volume.

ANNEXURES

ANNEXURE – I

THE BIODIVERSITY OF THE VELLODE BIRD SANCTUARY

Species	Total
Birds	148
Mammals	6
Fishes	01
Amphibians	07
Reptiles	11
Butterflies	25
Surface dwelling invertebrates	5
Plants	129

ANNEXURE – II

BIRDS OF VELLODE

Sl.No	Common name	Local name	Species name	Family	IUCN Status
1.	Ashy prinia	Sambalkathirkuruvi	*Prinia socialis*	Cisticolidae	LC
2.	Ashy-crowned sparrow-lark	Vaanampaadi	*Eremopterix griseus*	Alaudidae	LC
3.	Asian koel	Kuyil	*Eudynamys scolopaceus*	Cuculidae	LC
4.	Asian open bill stork	Nathaikuthinaarai	*Anastomus oscitans*	Ciconiidae	LC
5.	Asian paradise-flycatcher	Arasavaal Eepadippan	*Terpsiphone paradisi*	Monarchidae	LC
6.	Baya weaver	Thookanangkuruvi	*Ploceus philippinus*	Ploceidae	LC
7.	Barn or Screech Owl	Gookai	*Tyto alba*	Tytonidae	LC
8.	Bay-backed shrike	-	*Lanius vittatus*	Laniidae	LC
9.	Black breasted weaver	-	*Ploceus benghalensis*	Ploceidae	LC
10.	Black drongo	Karichangkuruvi	*Dicrurus macrocercus*	Dicruridae	LC

11.	Black headed munia/ Chestnut munia	-	*Lonchura atricapilla*	Estrildidae	LC
12.	Black kite	Kala prunthu	*Milvus migrans*	Accipitridae	LC
13.	Black winged kite	Siriyakarumparunthu	*Elanus caeruleus*	Accipitridae	LC
14.	Black shouldered kite	-	*Elanus axillaris*	Accipitridae	LC
15.	Black throated munia	-	*Lonchura kelaarti*	Estrildidae	LC
16.	Black –winged stilt	Nedungkal ullan	*Himantopus himantopus*	Recurvirostridae	LC
17.	Black-crowned night heron	Iraakokku	*Nycticorax nycticorax*	Ardeidae	LC
18.	Blue cheeked Bee eater	Neelapulli Panjuruttan	*Merops persicus*	Meropidae	LC
19.	Blue headed Rock Thrush	Neelathalaipoonkuruvi	*Monticola cinclorhyncha*	Muscicapidae	LC
20.	Blue Rock Pigeon	Madapura	*Columba livia*	Columbidae	LC
21.	Blue tailed Bee eater	Neelavalpanchuruttan	*Merops philippinus*	Meropidae	LC
22.	Brahminy kite	Semparunthu	*Haliastur Indus*	Accipitridae	LC
23.	Brahminy starling / Black headed myna	Karungkondai myna	*Sturnia pagodarum*	Sturnidae	LC
24.	Brain fever bird	Akkakuyil	*Hierococcyx varius*	Cuculidae	LC
25.	Cattle egret	Unni Kokku	*Bubulcus ibis*	Ardeidae	LC
26.	Common babbler	Thavuttukuruvi	*Turdoides caudatus*	Leiothrichidae	LC
27.	Common coot	Namakozhi	*Fulica atra*	Rallidae	LC
28.	Common hoopoe	Kondalaathi	*Upupa epops*	Upupidae	NA
29.	Common iora	Manjal Chittu	*Aegithina tiphia*	Aegithinidae	LC
30.	Common moorhen	Thazhaikozhi	*Gallinula chloropus*	Rallidae	LC
31.	Common myna	Naganavaai	*Acridotheres tristis*	Sturnidae	LC
32.	Common raven	Andangkakkai	*Corvus corax*	Corvidae	LC
33.	Common sandpiper	Ullan	*Actitis hypoleucos*	Scolopacidae	LC
34.	Common snipe	Visiri Vaal Ullan	*Gallinago gallinago*	Scolopacidae	LC

34.	Barn swallow	Thagaivilan	*Hirundo rustica*	Hirundinidae	LC
35.	Common tailorbird	Thaiyal Sittu	*Orthotomus sutorius*	Cisticolidae	LC
36.	Coppersmith Barbet	Semmarbukukkuruvan	*Psilopogon haemacephalus*	Megalaimidae	LC
37.	Cotton teal	Kullathaara	*Nettapus coromandelianus*	Anatidae	LC
38.	Crested Lark	Vaanambadi	*Galerida cristata*	Alaudidae	LC
39.	Crow-pheasant	Semboothu	*Centropus sinensis*	Cuculidae	LC
40.	Curlew sandpiper	Kaarloo ullan	*Calidris ferruginea*	Scolopacidae	LC
41.	Oriental Darter or Snake bird	Paambuthaara	*Anhinga melanogaster*	Anhingidae	NT
42.	Dusk Crag Martin	Paaraithagaivilan	*Ptyonoprogne concolor*	Hirundinidae	LC
43.	Eurasian collared-dove	kallipura	*Streptopelia decaocto*	Columbidae	LC
44.	Eurasian golden oriole	Maanguil	*Oriolus oriolus*	Oriolidae	LC
45.	European white stork	Iropiya Vellai Naarai	*Ciconia ciconia*	Ciconiidae	LC
47.	Garganey	Neelasiraki	*Spatula querquedula*	Anatidae	LC
48.	Great cormorant	Periyaneerkaagam	*Phalacrocorax carbo*	Phalacrocoracidae	LC
49.	Great white pelican	Koolaikida	*Pelecanus onocrotalus*	Pelecanidae	LC
50.	Greater coucal	Senbagam	*Centropus sinensis*	Cuculidae	LC
51..	Indian spot-billed duck	Pullimookuvaathu	*Anas poecilorhyncha*	Anatidae	LC
52.	Grey francolin / Grey Partridge	Kauvuthaarai	*Ortygornis pondicerianus*	Phasianidae	LC
53.	Grey heron	Sambalnaarai	*Ardea cinerea*	Ardeidae	LC
54.	Eurasian Hoopoe	Kondalaththi	*Upupa epops*	Upupidae	LC
56.	House crow	Kaagam / Kaakai	*Corvus splendens*	Corvidae	LC
57.	House sparrow	Chitttukuruvi	*Passer domesticus*	Passeridae	LC
58..	House Swift	Naattuuzhavaran	*Apus nipalensis*	Apodidae	LC

59.	House swallow	Nattuthagaivilan	*Hirundo tahitica*	Hirundinidae	NA
60.	Common Myna / Indian Myna	Myna/ Naganavaipul	*Acridotheres tristis*	Sturnidae	LC
61.	Indian peafowl	Mayil	*Pavo cristatus*	Phasianidae	LC
62..	Indian pipit	Nedungkaalkuruvi	*Anthus rufulus*	Motacillidae	LC
63.	Indian pitta	-	*Pitta brachyuran*	Pittidae	LC
64.	Indian pond heron	-	*Ardeola grayii*	Ardeidae	LC
65.	Indian robin	Karun chittu	*Copsychus fulicatus*	Muscicapidae	LC
66.	Indian roller	-	*Coracias benghalensis*	Coraciidae	LC
67.	Rufous treepie	-	*Dendrocitta vagabunda*	Corvidae	LC
68.	Whiskered tern	Meesaiala	*Chlidonias hybridus*	Laridae	LC
69.	Jungle crow	Andankkaakai	*Corvus macrorhynchos*	Corvidae	LC
70.	Great egret/Large egret	-	*Ardea alba*	Ardeidae	LC
71.	Large Indian Parakeet	Pachaikili	*Psittacula eupatria*	Psittaculidae	LC
72.	Large pied wagtail	KaruppuVellaivalaatti	*Motacilla maderaspatensis*	Motacillidae	LC
73.	black-rumped flameback /Lesser golden backed woodpecker	Ponmuthugu maramkoththi	*Dinopium benghalense*	Picidae	LC
74.	Pied kingfisher	-	*Ceryle rudis*	Alcedinidae	LC
75.	Little Brown dove	China thavutupura	*Streptopelia senegalensis*	Columbidae	LC
76.	Little Cormorant	Siriyaneerkagam	*Microcarbo niger*	Phalacrocoracidae	LC
77.	Little Egret	Sinna kokku	*Egretta grazetta*	Ardeidae	LC
78.	Little Grebe / dabchick	Mukulipan	*Tachybaptus ruficollis*	Podicipedidae	LC
79.	Little Green Heron	-	*Butorides striatus*	Ardeidae	LC

80.	Little Ringed plover	-	*Charadrius dubius*	Charadriidae	LC
81.	Little stint	-	*Calidris minuta*	Scolopacidae	LC
82.	Lorikeet	Kullakili	*Loriculus vernalis*	Psittaculidae	LC
83.	Loten's sunbird		*Nectarinia lotenia*	Nectariniidae	LC
84.	Magpie Robin	KaruppuVellaiKuruvi	*Copsychus saularis*	Muscicapidae	NA
85.	Intermediate egret/Median egret	-	*Ardea intermedia*	*Ardea intermedia*	LC
86.	Night heron	Ira kokku	*Nycticorax nycticorax*	Ardeidae	LC
87.	Nilgiri flycatcher	NilagiriEepidippan	*Eumyias albicaudata*	Muscicapidae	LC
88.	Northern shoveler	-	*Spatula clypeata*	Anatidae	LC
89.	Black-headed ibis/Oriental white ibis	Vellaiaruvamookan	*Threskiornis melanocephalus*	Threskiornithidae	NT
90.	Paddy field pipit/Oriental pipit	Nedungkaalkuruvi	*Anthus rufulus*	Motacillidae	LC
91.	Rostratulidae/Painted snipe	Mayilunnan	*Rostratula benghalensis*	Rostratulidae	LC
92.	Painted stork	Manjalmookunaarai	*Mycteria leucocephala*	Ciconiidae	NT
93.	Palm Swift/ Asian palm swift	Panaiuzhavaran	*Cypsiurus balasiensis*	Apodidae	LC
94.	Pheasant-tailed jacana	Neelavalilaikozhi	*Hydrophasianus chirugus*	Jacanidae	LC
95.	Pied bush chat	KaruppuVellaiPutharchittu	*Saxicola caprata*	Muscicapidae	LC
96.	Pied crested cuckoo/ Jacobin cuckoo	Sudalaikuyil	*Clamator jacobinus*	Cuculidae	LC
97.	Pied Flycatcher Shrike	KaruppuVellaiKeechan	*Hamipus picatus*	Vangidae	LC
98.	Pied Kingfisher	Karuppu Vellai Meenkothi	*Ceryle rudis*	Alcedinidae	LC
99.	Pin-tailed snipe	-	*Gallingo stenura*	Scolopacidae	LC
100.	Pond heron	Kuruttukokku	*Ardeola grayii*	Ardeidae	LC
101.	Purple heron	-	*Ardea purpurea*	Ardeidae	LC

102.	Purple moorhen	-	*Porphyrio porphyria*		
103.	Purple rumped sunbird	-	*Leptocoma zeylonica*	Nectariniidae	LC
104.	Purple sunbird	Oothuthaenchittu	*Cinnyris asiaticus*	Nectariniidae	LC
105.	Red Rumped / Stiated Swallow	Sivappu pitta thagaivilaan	*Cecropis daurica*	Hirundinidae	LC
106.	Red Turtle Dove/ red collared dove	Thavuttupura	*Streptopelia tranquebarica*	Columbidae	LC
107.	Red vented bulbul	Sinnan	*Pycnonotus cafer*	Pycnonotidae	LC
108.	Red-wattled lapwing	Sivappumooku alkatti	*Vanellus indicus*	Charadriidae	LC
109.	Red-capped babbler	-	*Timaliapilesta*	-	
110.	Ring Dove	Kallipura	*Streptopelia decaocta*	-	
111.	River tern/Indian river tern	Aathu ala	*Sterna aurantia*	Laridae	VU
112.	Roller or Blue Jay	PanaKaadai	*Coracias benghalensis*	-	
113.	Rose-ringed parakeet	Senthoorapayingkili	*Psittacula krameri*	Psittaculidae	LC
114.	Rufous fronted prinia	-	*Prinia buchanani*	Cisticolidae	LC
115.	Shama	Isaipaadumshama	*Copsycus malabaricus*	Muscicapidae	LC
116.	Shikra		*Accipiter badius*	Accipitridae	LC
117.	Short toed snake-eagle	Onankothiparunthu	*Circaetus gallicus*	Accipitridae	LC
118.	Small Bee eater	Pachaipanchurutan	*Merops orientalis*		LC
119.	Small blue kingfisher	Siraalmeenkoththi	*Alcedo atthis*	Alcedinidae	LC
120.	Blue-faced malkoha	-	*Phaenicophaeus viridirostris*		LC
121.	Spot-billed pelican	Sambal koozhaikada	*Anas poecilorhyncha*	Pelecanidae	LC
122.	Spotted dove	Pullipura	*Streptopelia chinensis*	Columbidae	LC
123.	Spotted owlet	Pulli Aanthai	*Athene brama*	Strigidae	LC
124.	Stork billed kingfisher	-	*Halcyon capensis*	Alcedinidae	LC
125.	Tailor bird	Thaiyalchittu	*Orthotomus sutorius*	Cisticolidae	LC
126.	Thick billed Flower pecker	Paruththaalagu malar koththi	*Dicaeum agile*	Dicaeidae	LC

127.	Thick billed warbler		*Acrocephalus aedon*	Acrocephalidae	LC
128.	Tickell's blue flycatcher	NeelaEepidippan	*Cyornis tickelliae*	Muscicapidae	LC
129.	Tickell's flower pecker	-	*Dicaeum erythrorhynchos*	Dicaeidae	LC
130.	Treepie	Vaal kaakkai	*Dendrocitta vagabunda*	Corvidae	LC
131.	Tufted Pochard	-	*Aythya fuligula*	Anatidae	LC
132.	Verditer Flycatcher	-	*Muscicapa thalassina*	Muscicapidae	LC
134.	Watercock	Neerkozhi	*Gallicrex cinerea*	Rallidae	LC
135.	White bellied Blue Flycatcher	VellaivayithuneelEepidippan	*Cyornis pallipes*	Muscicapidae	LC
136.	White bellied drango	-	*Dicrurus caerulescens*	Dicruridae	LC
137.	White breasted Kingfisher	Venkazhuthumeenkoththi	*Halcyon smyrnensis*	Alcedinidae	LC
138.	White breasted Waterhen	Kambulkozhi	*Amaurornis phoenicurus*	Rallidae	LC
139.	White browed Bulbul	Venpuruvachinnan	*Pycnonotus luteolus*	Pycnonotidae	LC
140.	White cheeked barbet	-	*Megalaima viridis*	Megalaimidae	LC
141.	White cheeked Bulbul	KaruppuVellaiChinnan	*Pycnonotus leucogenys*	Pycnonotidae	LC
142.	Indian white-eye	Vellaikanni	*Zosterops palpebrosus*	Zosteropidae	LC
143.	White-rumped munia	-	*Lonchura striata*	Estrildidae	LC
144.	White-throated munia	-	*Lonchura malabarica*	Estrildidae	LC
145.	Wood sandpiper	Pori ullan	*Tringa glareola*	Scolopacidae	LC
146	Yellow throated Sparrow	ManjakaluththuKuruvi	*Petronia xanthocollis*	Passeridae	LC
147.	Western Yellow wagtail	Manjalvaalaatikuruvi	*Motacilla flava*	Motacillidae	LC
148.	Yellow wattled lapwing	Manjalmookualkatti	*Vanellus malabaricus*	Charadriidae	LC

ANNEXURE – III

LIST OF MAMMALS RECORDED FROM VBS

S. no.	Common name	Scientific Name	Family
1	Spotted deer	*Axis axis*	Cervidae
2	Three-striped Palm Squirrel	*Funambulus palmarum*	Rodentia
3	Indian bandicoot	*Bandicota indica*	Rodentia
4	House Rat	*Ratus ratus*	Rodentia
5	Black-napped Hare	*Lepus nigricollis*	Lagomorph
6	Indian grey mongoose	*Herpestes edwardsii*	Carnivora

ANNEXURE - IV

LIST OF FISH, AMPHIBIANS AND REPTILES RECORDED FROM VBS

S. No	*Scientific Name*	Common Name	Local Name	Family	Category
Fishes					
1	*Cyprinus carpio*	Common Carp	Kendai (Valarpu Kendai)	Cyprinidae	VU
2	*Ctenopharyngodon idella*	Grass Carp	Pullukendai, Kendai	Cyprinidae	NA
3	*Channa striata*	Striped Snakehead, Butterfish	Viral meen	Channidae	LC
4	*Channa punctata*	Spotted snakehead	Kuravai meen	Channidae	LC
5	*Etroplus suratensis*	Green chromide	Karimeen, Sethameen	Cichlidae	LC
6	*Macrognathus pancalus*	Spiny eel	Aaraa meen	Mastacembelidae	LC
7	*Hyporhamphus limbatus*	Half beak	Cola meen	Hemiramphidae	LC
8	*Puntius sophore*	Pool barb, Spotfin Swamp Barb	Kulla kendai	Cyprinidae	LC
9	*Glossogobius giuris*	Tank goby	Uluvai meen	Gobiidae	LC
10	*Catla catla*	Caltla	Korakendai, Catla	Cyprinidae	LC
11	*Cirrhinus mrigala*	Mrigal carp	Mirgal meen	Cyprinidae	LC
12	*Labeo rohita*	Rohu	Rohu, Kannadikendai	Cyprinidae	LC

S. No	Common name	Scientific name	Family
Amphibians			
1	Paddy field frog	*Fejervarya* sp	Dicroglosidae

2	Asian common toad	*Duttaphrynus melanostictus*	Bufonidae
3	Common Indian Toad	*Duttaphrynus melanostictus*	-
4	Narrow mouthed frog	*Microhyla ornate*	-
5	Painted frog	*Kaloula taprobanica*	-
6	Common tree frog	*Polypedatus maculatus*	-
7	Skipper frog	*Euphlyctis cyanophlyctis*	-
Reptiles			
1.	Common Skink	*Mabuya carinata*	Scincidae
2.	Snake Skink	*Lygosoma punctatum*	Scincidae
3.	Garden Lizard	*Calotes versicolor*	Agamidae
4.	Checkered keelback	*Xenochrophis piscator*	Colubridae
5	House Gecko	*Hemidactylus frenatus*	-
6	Spotted Indian Gecko	*Hemidactylus brookii*	-
7	Green lizard	*Calotes calotes*	-
8	Monitor lizard	*Varanus bengalensis*	-
9	Common Indian Skink	*Eutrophis carinata*	-
10	Olive keelback	*Atretium schistosum*	-
11	Broze backed tree snake	*Dendrelaphis tristis*	-

ANNEXURE – V

LIST OF BUTTERFLIES

S. No	Common Name	Scientific Name	Family	Status
1	Blue Tiger	*Tirumala limniace*	Danainae	Common
2	Blue Pansy	*Junonia orithya*	Nymphalidae	**Common**
3	Common Rose	*Pachliopta aristolochiae*	Papilioninae	Common
4	Crimson Rose	*Pachliopta hector*	Papilioninae	Common
5	Common Mormon	*Papilio polytes*	Rutaceae	Common
6	Common Leopard	*Phalanta phalantha*	Nymphalidae	Common
7	Common Pierrot	*Castalius rosimon*	Lycaenidae	Common

8	Common Grass Yellow	*Eurema hecabe*	Coliadinae	Common
9	Common Gull	*Cepora nerissa*	Pieridae	Common
10	Common Cerulean	*Jamides celeno*	Polyommatinae	Common
11	Common Crow	*Euploea core*	Danainae	Common
12	Common Castor	*Ariadne merione*	Biblidinae	Common
13	Mottled Emigrant	*Catopsilia pyranthe*	Coliadinae	Common
14	Small Orange Tip	*Colotis etrida*	Pierinae	Common
15	Small Grass Yellow	*Eurema brigitta*	Coliadinae	Common
16	Pale Grass Blue	*Pseudozizeeria maha*	Polyommatinae	Common
17	Small Grass Jewel	*Freyeria putli*	Polyommatinae	Common
18	Psyche	*Leptosia nina*	Pieridae	Common
19	Plain Tiger	*Danaus chrysippus*	Danainae	Common
20	Indian Skipper	*Spialia galba*		Common
21	Tawny Coster	*Acraea violae*	Acraeinae	Common
22	Angled Castor	*Ariadne ariadne*	Biblidinae	Uncommon
23	Lime Butterfly	*Papilio demoleus*	Papilionidae	Common
24	Lemon Pansy	*Junonia lemonias*	Nymphalinae	Common
25	Gram Blue	*Euchrysops cnejus*	Lycaenidae	Common

ANNEXURE – VI

LIST OF ODONATES

S. No	Common Name	Scientific Name	Family	Status
1	Golden Dartlet	*Ischnura aurora*	Coenagrionidae	Common
2	Senegal Golden Dartlet	*Ischnura senegalensis*	Coenagrionidae	Common
3	Pigmy Dartlet	*Agriocnemis pygmaea*	Coenagrionidae	Common
4	Blue Dart	*Pseudagrion microcephalum*	Coenagrionidae	Common
5	Three Lined Dart	*Pseudagrion decorum*	Coenagrionidae	Common
6	Ditch Jewel	*Brachythemis contaminata*	Libellulidae	Common
7	Ruddy Marsh Skimmer	*Crocothemis servilia*	Libellulidae	Common
8	Ground Skimmer	*Diplacodes trivialis*	Libellulidae	Common
9	Green Marsh Hawk	*Orthetrum sabina*	Libellulidae	Common
10	Wandering Glider	*Pantala flavescens*	Libellulidae	Common

11	Red Marsh Trotter	*Tramea basilaris*	Libellulidae	Common
12	Black Marsh Trotter	*Tramea limbata*	Libellulidae	Common
13	Crimson Marsh Glider	*Trithemis aurora*	Libellulidae	Common
14	Long-Legged Marsh Glider	*Trithemis pallidinervis*	Libellulidae	Common

ANNEXURE: VII

LIST OF INSECTS AND OTHER INVERTEBRATES

S.no	Name of the Insects	Family
1	Ground beetle	Carabidae
2	Mole cricket	Gryllotalpidae
3	Marsh fly	Conopidae
4	Jumping spider	Salticidae
5	Tiger beetle	Cicindellidae
6	Fire ant	*Solenopsis sp*
7	Black garden ant	*Camponotus sp*
8	Harvester ant	*Pheidole sp*
9	Asiatic honey bee	*Apis cerana*
10	Cape honey bee	*Apis mellifera*
11	Housefly	*Musca domestica*
12	Centipede	*Scolopendra hardwickei*

ANNEXURE: VIII

LIST OF PLANTS

S.No.	Plant name	Family
1.	***Abutilon indicum***(L.) Sweet	Malvaceae
2.	***Acacia nilotica***(L.) Delile *Acacia arabica* (Lam.) Willd.	Mimosaceae
3.	***Acalypha indica*** L.	Euphorbiaceae
	Achyranthes aspera L.	Amaranthaceae

4.		
5.	***Aeschynomene aspera*** L.	Fabaceae
6.	***Alangium salviifolium*** (L.f.) Wangerin	Alangiaceae
7.	***Alternanthera sessilis*** (L.) R.Br. ex DC.	Amaranthaceae
8.	***Alysicarpus monilifer (L.) DC.***	Fabaceae
9.	***Alysicarpus vaginalis (L.) DC.***	Fabaceae
10.	***Amaranthus spinosus L.***	Amaranthaceae
11.	***Ammannia baccifera L.***	Lythraceae
12.	***Andrographis echioides (L.) Nees***	Acanthaceae
13.	***Andrographis paniculata (Burm.f.) Nees***	Acanthaceae
14.	***Aponogeton natans (L.) Engl. & K.Krause***	Aponogetonaceae
15.	***Argemone mexicana L.***	Papaveraceae
16.	***Arundo donax L.***	Poaceae
17.	***Asystasia gangetica (L.) T.Anderson***	Acanthaceae
18.	***Azadirachta indica A.Juss.***	Meliaceae
19.	***Azolla filiculoides*** Lam.	
20.	***Barleria prionitis*** L.	Acanthaceae
21.	***Bacopa monnieri*** (L.) Wettst.	Plantaginaceae
22.	***Bergia ammannioides*** Roxb. ex Roth	Elatinaceae
23.	***Blepharis integrifolia*** (L.f.) E.Mey. & Drège ex Schinz *Blepharis repens* (Vahl) Roth	Acanthaceae
24.	***Blepharis maderaspatensis*** (L.) B.Heyne ex Roth	Acanthaceae

25.	***Blyxaaubertii*** Rich.	Hydrocharitaceae
26.	***Borassus flabellifer***	Arecaceae
27.	***Cabomba caroliniana*** A.Gray	Cabombaceae
28.	***Calotropis gigantea*** (L.) Dryand.	Asclepidaceae
29.	***Cardiospermum halicacabum*** L.	Sapindaceae
30.	***Cassine glauca (Rottb.) Kuntze***	Celastraceae
31.	***Cayratia trifolia (L.) Domin*** ***Vitis trifolia L.***	Vitaceae
32.	***Celosia argentea L.***	Amaranthaceae
33.	***Celtis philippensis Blanco*** ***Celtiswightii Planch.***	Cannabaceae
34.	***Ceratophyllum demersum L.***	Ceratophyllaceae
35.	***Charanitella***	
36.	***Chloris barbata*** Sw.	Poaceae
37.	***Cleome gynandra***L. *Cleome pentaphylla*L.	Cleomaceae
38.	***Clitoria ternatea*** L.	Fabaceae
39.	***Commelina*** sp.	Commelinaceae
40.	***Corchorus aestuans*** L.	Tiliaceae
41.	***Corchorus depressus*** (L.) Stocks	Tiliaceae
42.	***Corchorus fascicularis*** Lam.	Tiliaceae
43.	***Corchorus olitorius*** L.	Tiliaceae
44.	***Crotalaria verrucosa*** L.	Fabaceae
45.	***Croton bonplandianus*** Baill.	Euphorbiaceae

46.	***Ctenolepis garcini*** (L.) C.B.Clarke	Cucurbitaceae
47.	***Cyanotis axillaris*** (L.) D.Don ex Sweet	Commelinaceae
48.	***Cyanthillium cinereum*** (L.) H.Rob. *Vernoniacinerea*(L.) Less.	Compositae
49.	***Cyperus distans*** L.f.	Cyperaceae
50.	***Cyperus pangorei Rottb.***	Cyperaceae
51.	***Desmodium triflorum (L.) DC.***	Fabaceae
52.	***Digera muricata (L.) Mart.***	Amaranthaceae
53.	***Ecliptra prostrata (L.) L.***	Compositae
54.	***Emilia sonchifolia (L.) DC. ex DC.***	Asteraceae
55.	***Enicostema axillaresubsp.littorale(Blume) A.Raynal Enicostemalittorale Blume***	Gentianaceae
56.	***Equisetum ramosissimum Desf.***	Equisetaceae
57.	***Eragrostis amabilis(L.) Wight & Arn.*** ***Eragrostis plumosa (Retz.) Link*** ***Eragrostis tenella (L.) P.Beauv. ex Roem. & Schult.***	Poaceae
58.	***Eragrostis unioloides (Retz.) Nees ex Steud.***	Poaceae
59.	***Euphorbia hirta L.***	Euphorbiaceae
60.	***Euphorbia rosea Retz.***	Euphorbiaceae
61.	***Evolvulus alsinoides (L.) L.***	Convolvulaceae
62.	***Ficus lacor Buch.-Ham.*** ***FicusinfectoriaRoxb.***	Moraceae
63.	***Flaveria trinervia (Spreng.) C.Mohr***	Asteraceae
64.	***Flueggea virosa (Roxb. ex Willd.) Royle*** ***Securinega virosa (Roxb. ex Willd.) Baill.***	Euphorbiaceae
65.	***Galinsoga parviflora Cav.***	Asteraceae

66.	***Geissaspiscristata Wight & Arn.***	Leguminosae
67.	***Gisekia pharnaceoides L.***	Gisekiaceae
68.	***Glinus lotoides L.***	Molluginaceae
69.	***Glinus oppositifolius (L.) Aug.DC.***	Molluginaceae
70.	***Gomphrena celosioides Mart.***	Amaranthaceae
71.	***Grangea maderaspatana (L.) Poir.***	Asteraceae
72.	***Hemidesmus indicus (L.) R. Br. ex Schult.***	Asclepiadaceae
73.	***Hydrilla verticillata (L.f.) Royle***	Hydrocharitaceae
74.	***Hedyotis neesiana Arn.*** ***Oldenlandia nitida (Kurz) Gamble***	Rubiaceae
75.	***Hybanthus enneaspermus (L.) F.Muell.*** ***Ionidium enneaspermum(L.) Vent.***	Violaceare
76.	***Hygrophila auriculata (Schumach.) Heine*** ***Asteracantha longifolia Nees***	Acanthaceae
77.	***Hygroryza aristata (Retz.) Nees ex Wight & Arn.***	Poaceae
78.	***Hyptis suaveolens (L.) Poit.***	Lamiaceae
79.	***Ipomoea aquatica Forssk.***	Convolvulaceae
80.	***Ipomoea barlerioides (Choisy) Benth. ex C.B. Clarke***	Convolvulaceae
81.	***Justicia tranquebariensis L.f.***	Acanthaceae
82.	***Launaea sarmentosa (Willd.) Sch.Bip. ex Kuntze***	Asteraceae
83.	***Lemna minor L.***	Lemnaceae
84.	***Leucas aspera (Willd.) Link***	Lamiaceae
85.	***Limnocharis flava (L.) Buchenau***	Alismataceae
86.	***Limnophila aromatica (Lam.) Merr.***	Plantaginaceae

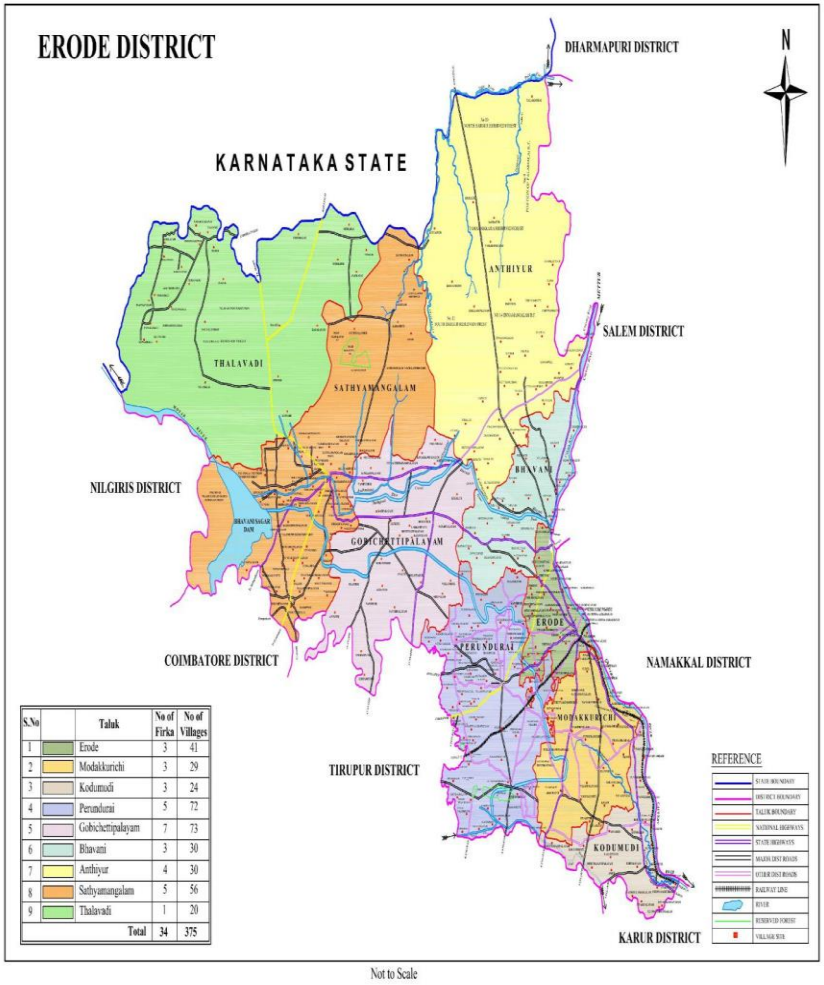
87.	***Limnophila heterophylla (Roxb.) Benth.***	Plantaginaceae
88.	***Marsilia sp.***	Marsiliaceae
89.	***Mukia maderaspatana (L.) M.Roem.*** ***Melothria maderaspatana(L.) Cogn.***	Cucurbitaceae
90.	***Momordica charantia L.***	Cucurbitaceae
91.	***Mukia maderaspatana(L.) M.Roem.*** ***Melothria maderaspatana(L.) Cogn.***	Cucurbitaceae
92.	***Merremia tridentata (L.) Hallier f.***	Convolvulaceae
93.	***Mollugo nudicaulis Lam.***	Molluginaceae
94.	***Mollugo pentaphylla L.***	Molluginaceae
95.	***Monochoria vaginalis (Burm.f.) C.Presl***	Pontederiaceae
96.	***Nelumbo nucifera Gaertn.***	Nymphaeaceae
97.	***Neptunia oleracea Lour.*** ***Neptuniaprostrata (Lam.) Baill.***	Leguminosae
98.	***Nymphaea alba L.*** ***Nymphaeaalbavar.rubraLönnr.***	Nymphaeaceae
99.	***Nymphaea nouchali Burm. f.***	Nymphaeaceae
100.	***Nymphaea pubescens Willd.***	Nymphaeaceae
101.	***Nymphoides indica (L.) O. Kuntze***	Menyanthaceae
102.	***Ocimum tenuiflorum L.*** ***Ocimum sanctum L.***	Lamiaceae
103.	***Oldenlandia herbacea (L.) Roxb.***	Rubiaceae
104.	***Ottelia alismoides (L.) Pers.***	Hydracharitaceae
105.	***Oxystelma esculentum (L. f.) Sm.***	Asclepiadaceae
106.	***Paspalidium punctatum (Burm.) A.Camus***	Poaceae
107.	***Paspalum scrobiculatum L.***	Poaceae

108.	***Pavonia zeylanica (L.) Cav.***	Malvaceae
109.	***Pergularia daemia(Forssk.) Chiov. Daemia extensa R.Br.***	Asclepiadaceae
110.	***Persicaria glabra (Willd.) M.Gómez Polygonum glabrum Willd.***	Polygonaceae
111.	***Phragmites karka (Retz.) Trin. ex Steud.***	Poaceae
112.	***Phyla nodiflora (L.) Greene***	Verbenaceae
113.	***Phyllanthus amarus Schumach. & Thonn.***	Euphorbiaceae
114.	***Phyllanthus lawii J.Graham Phyllanthus polyphyllus Dalzell & A.Gibson***	Euphorbiaceae
115.	***Phyllanthus maderaspatensis L.***	Phyllanthaceae
116.	***Physalis minima L.***	Solanaceae
117.	***Pistiastratiotes L.***	Araceae
118.	***Pithecellobium dulce (Roxb.) Benth.***	Mimosaceae
119.	***Pongamia pinnata (L.) Pierre Pongamia glabra Vent.***	Fabaceae
120.	***Portulaca tuberosa Roxb.***	Portulacaceae
121.	***Prosopis chilensis (Molina) Stuntz***	Mimosaceae
122.	***Pupalia lappacea (L.) Juss.***	Amaranthaceae
123.	***Pycreus lanceolatus (Poir.) C.B.Clarke***	Cyperaceae
124.	***Pycreus polystachyos (Rottb.) P.Beauv.***	Cyperaceae
125.	***Ruellia patula Jacq.***	Acanthaceae
126.	***Sagittaria 1guayanensis Kunth***	Alismataceae
127.	***Scoparia dulcis L.***	Scrophulariaceae
128.	***Senna auriculata (L.) Roxb. Cassia auriculataL.***	Caesalpiniaceae

129.	***Sida acuta Burm.f.***	Malvaceae
130.	***Sida rhombifolia L.*** ***Sida rhomboidea Roxb. ex Fleming***	Malvaceae
131.	***Smithia blanda Wall.***	Fabaceae
132.	***Solanum trilobatum L.***	Solanaceae
133.	***Spermacoce neohispida Govaerts*** ***Borreria hispida Spruce ex K.Schum.***	Rubiaceae
134.	***Spermacoce ocymoides Burm.f.*** ***Borreria ocymoides (Burm.f.) DC.***	Rubiaceae
135.	***Spirodelapolyrrhiza (L.) Schleid.***	Araceae
136.	***Stachytarpheta jamaicensis (L.) Vahl***	Verbenaceae
137.	***Tephrosia purpurea (L.) Pers.***	Fabaceae
138.	***Terminalia arjuna (Roxb. ex DC.) Wight & Arn.***	Combretaceae
139.	***Tinospora sinensis (Lour.) Merr.*** ***Tinospora cordifolia (Willd.) Miers***	Menispermaceae
140.	***Trachys muricata (L.) Pers. ex Trin.***	Poaceae
141.	***Tragia plukenetii Radcl.-Sm.***	Euphorbiaceae
142.	***Tridax procumbens (L.) L.***	Compositae
143.	***Triumfetta pilosa Roth***	Malvaceae
144.	***Typha domingensis Pers.*** ***Typha angustata Bory & Chaub.***	Typhaceae
145.	***Wolffiaglobosa (Roxb.) Hartog & Plas***	Araceae
146.	***Xanthium strumarium L.***	Compositae

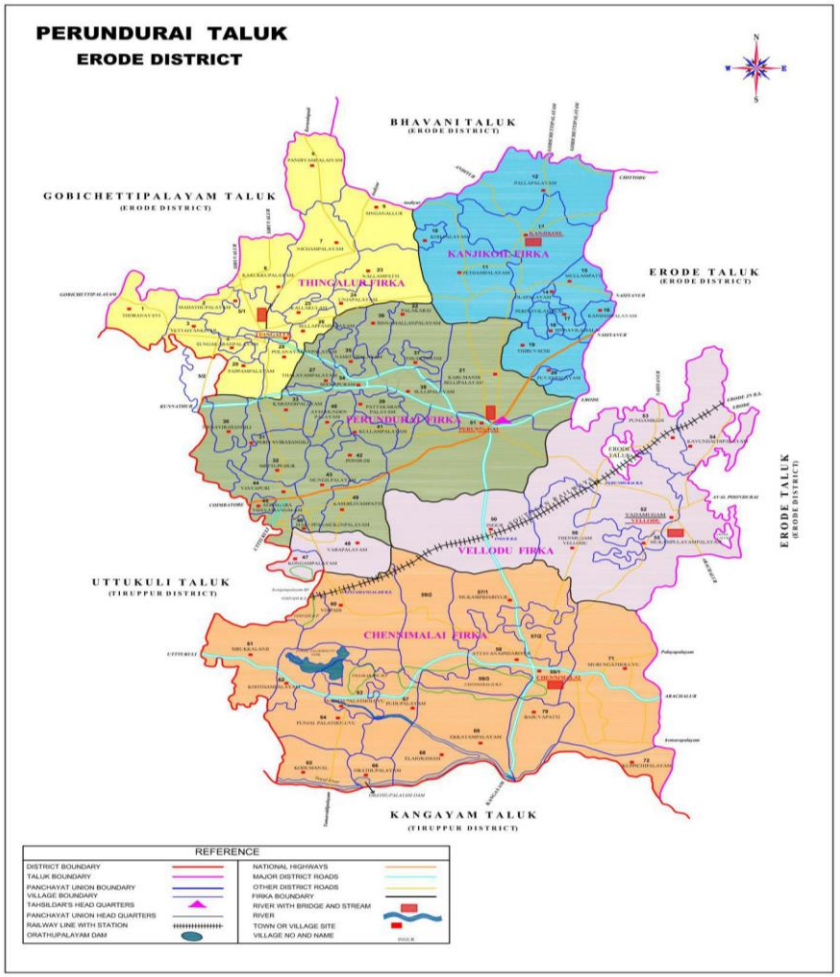
- The list are not exhaustive and subject to change

LIST OF MAPS

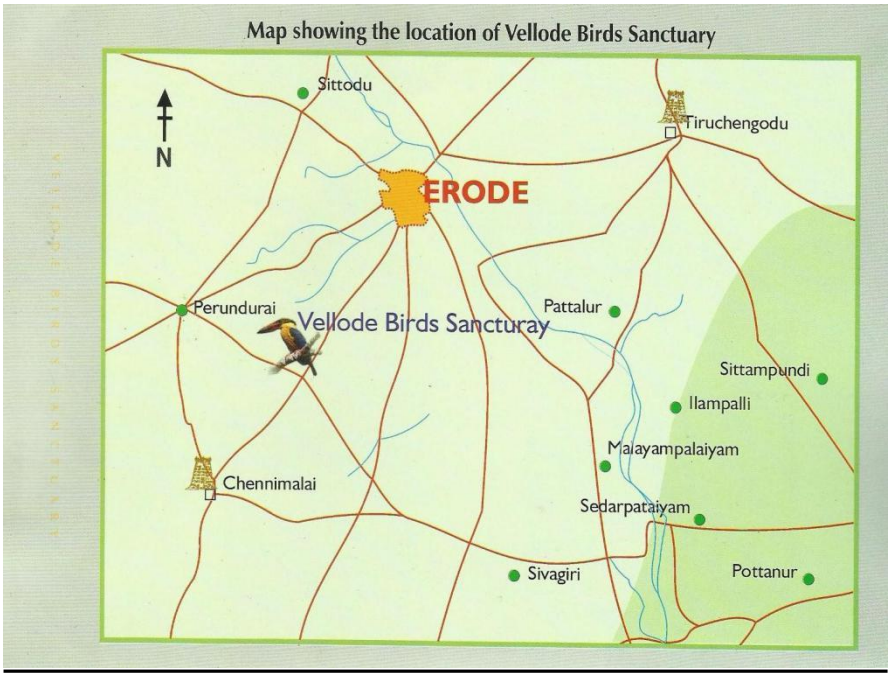


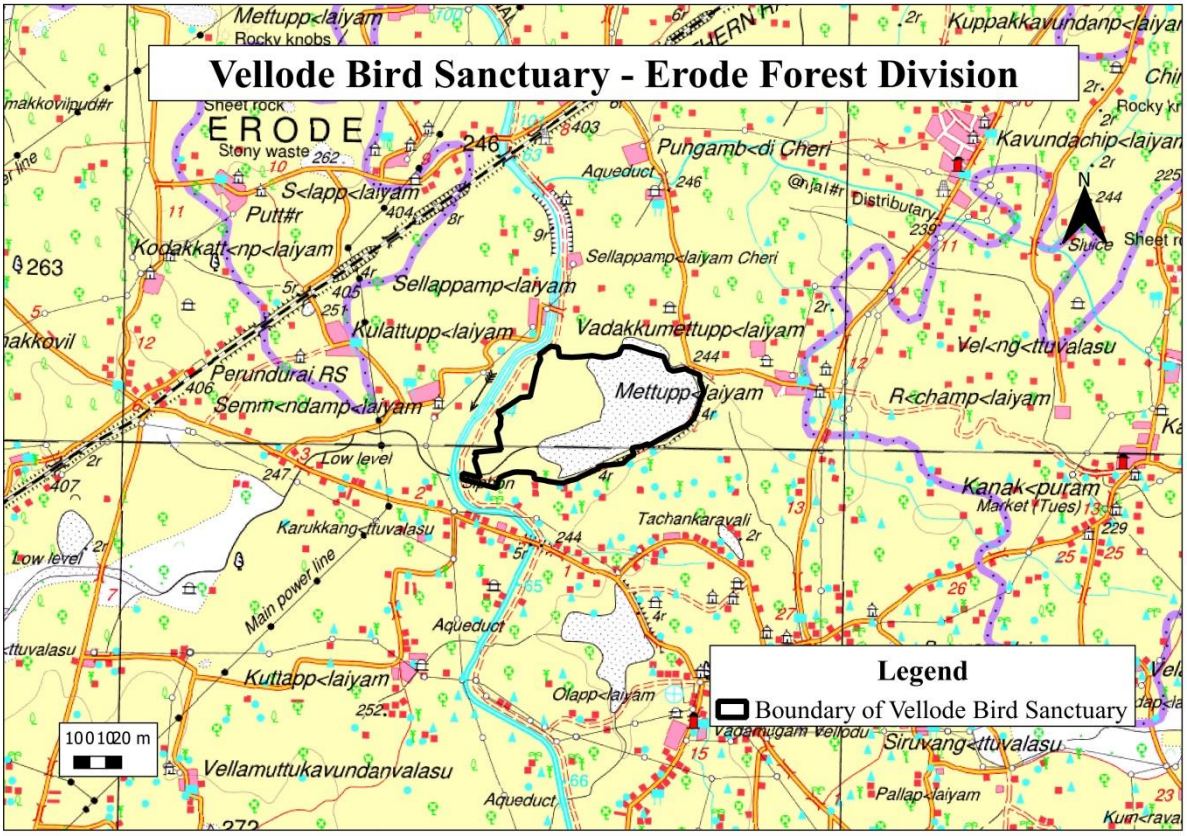
Not to Scale

Map : 1 - ERODE DISTRICT MAP

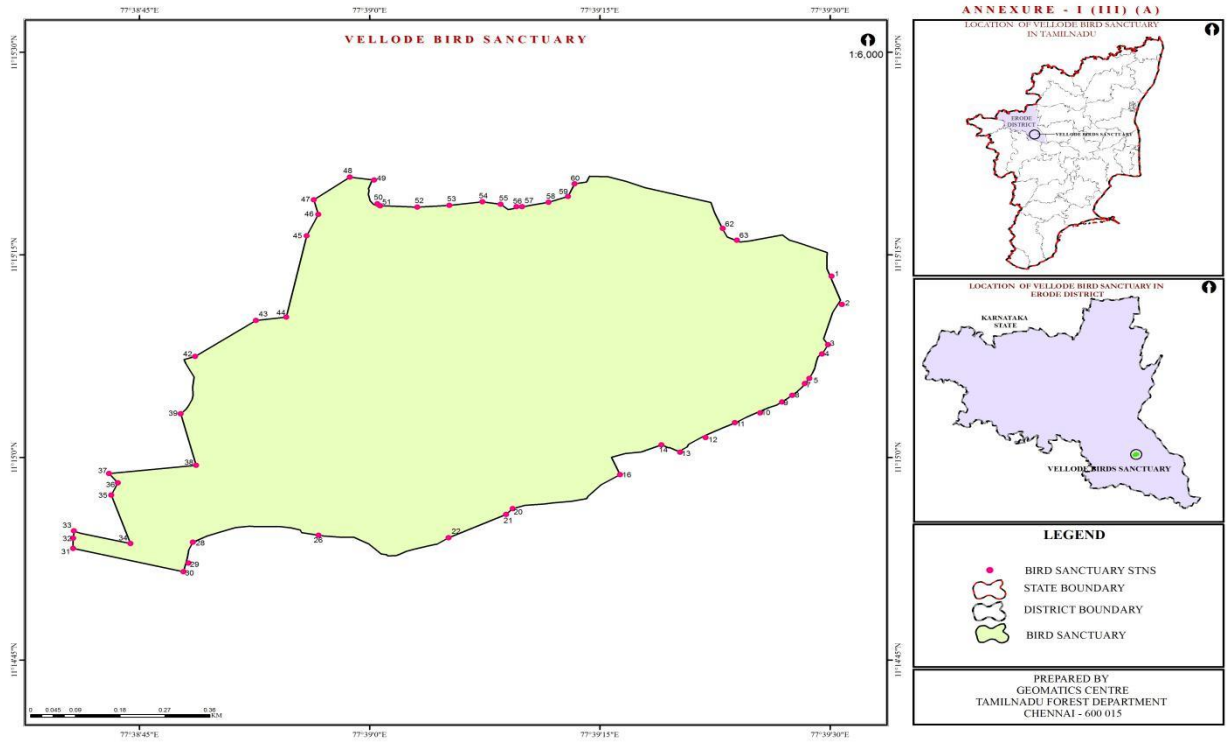


Map : 2 - TALUK MAP

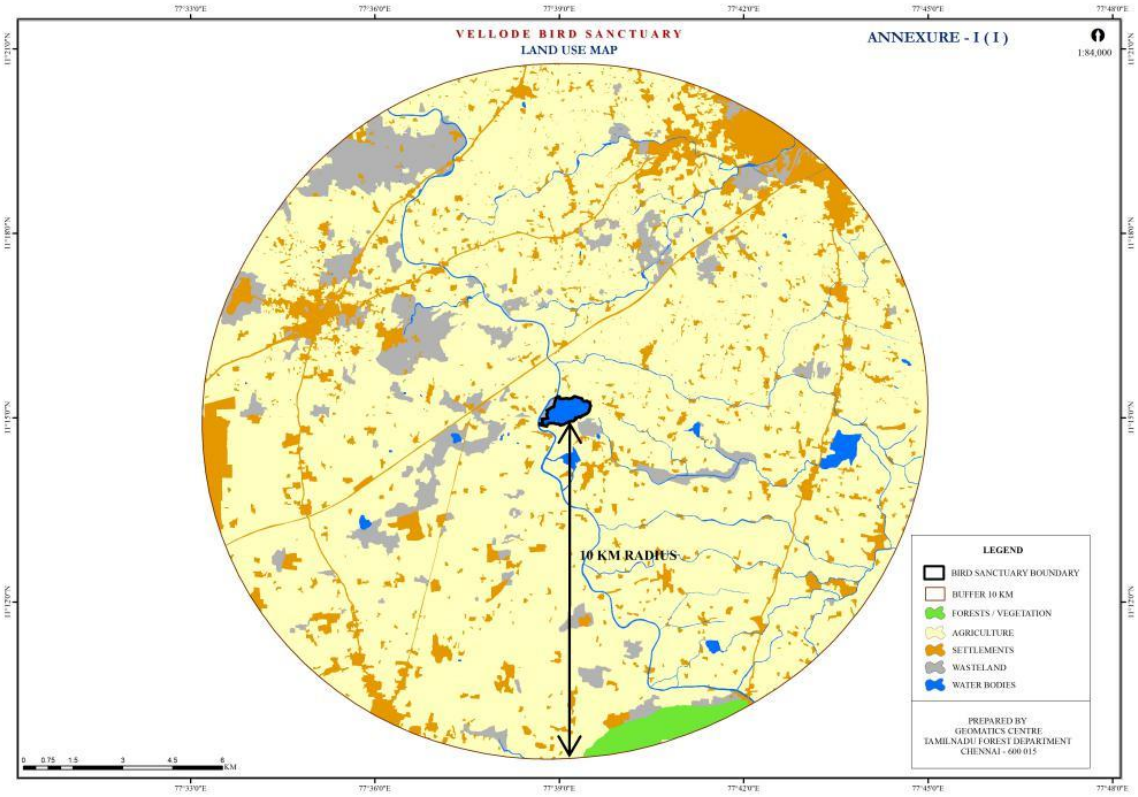




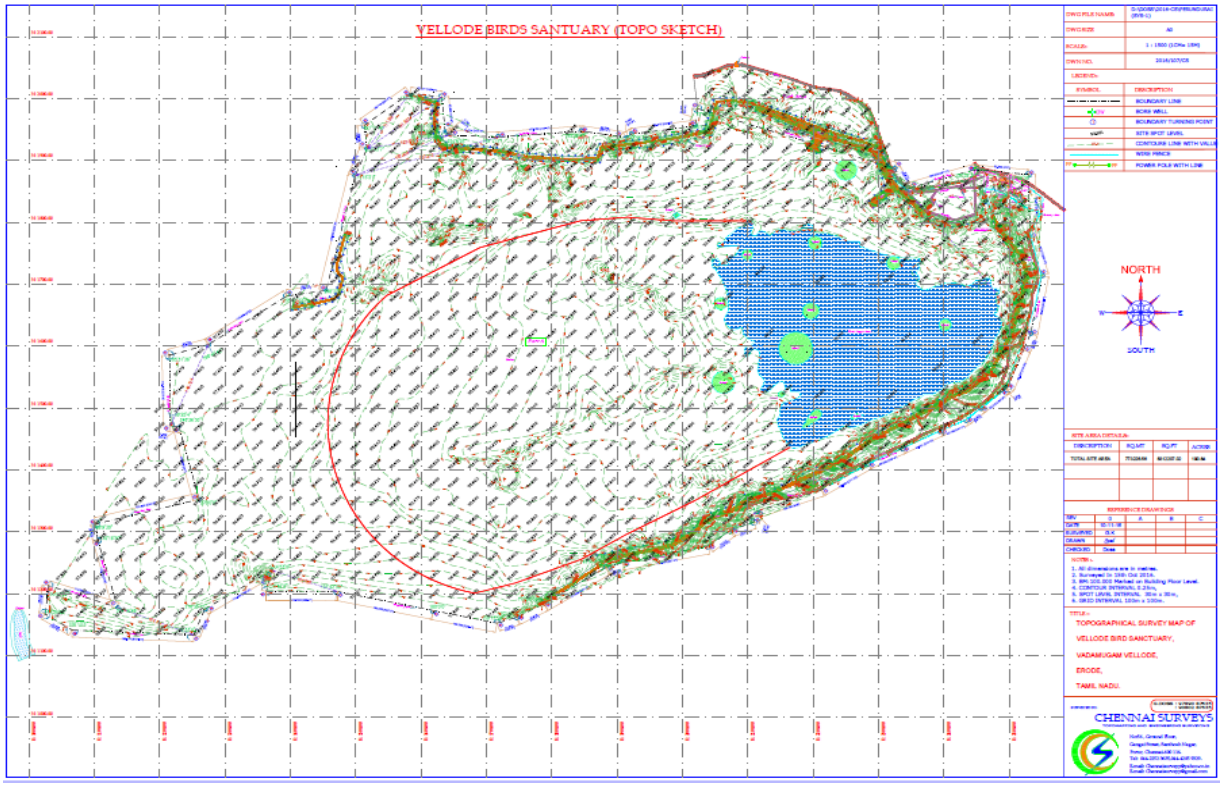
Map 3: - LOCATION MAPS

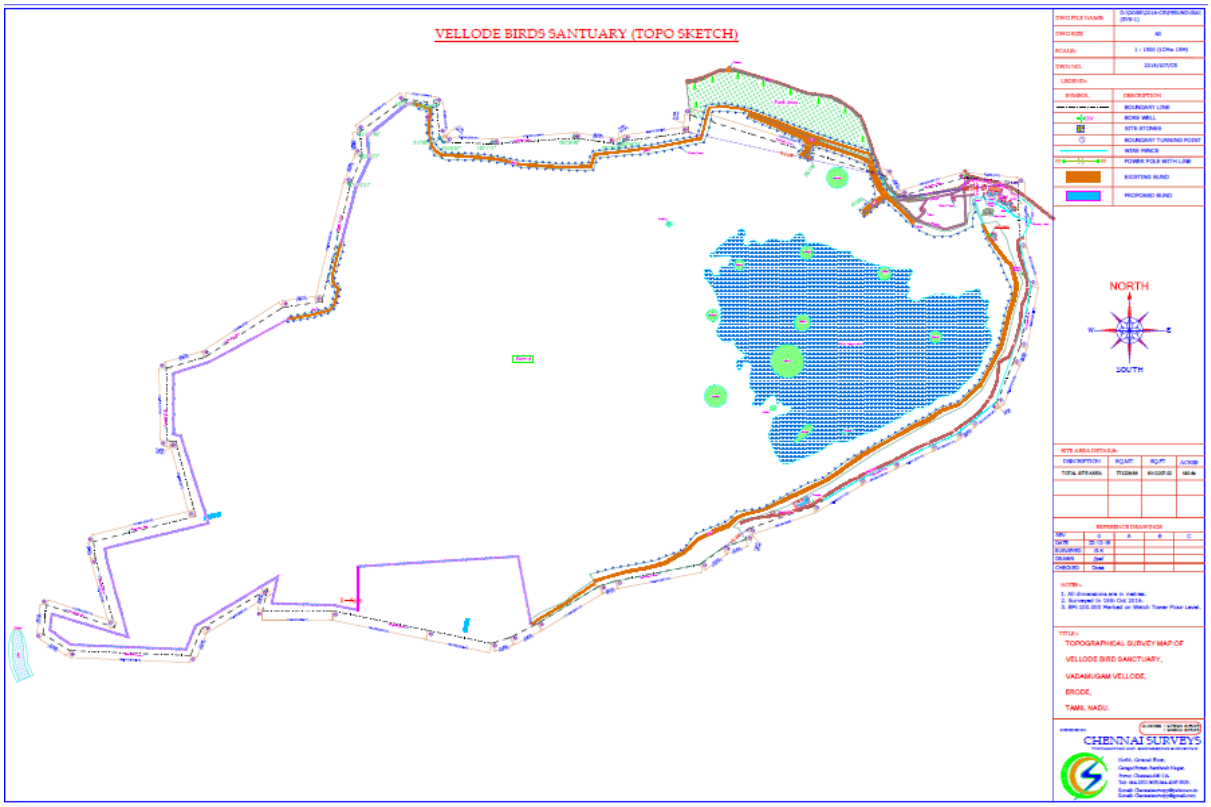


Map : 4 - BOUNDARY MAP OF VELLODE BIRDS SANCTUARY

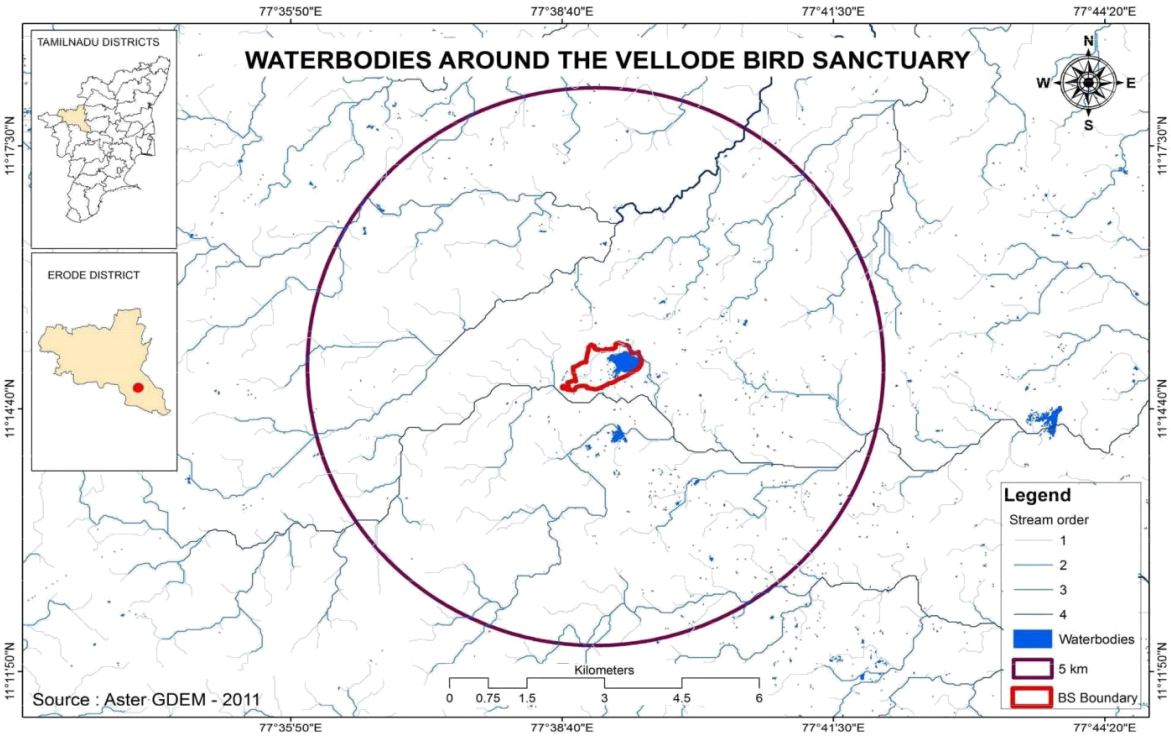


Map : 5 - LAND USE MAP OF VELLODE BIRD SANCTUARY

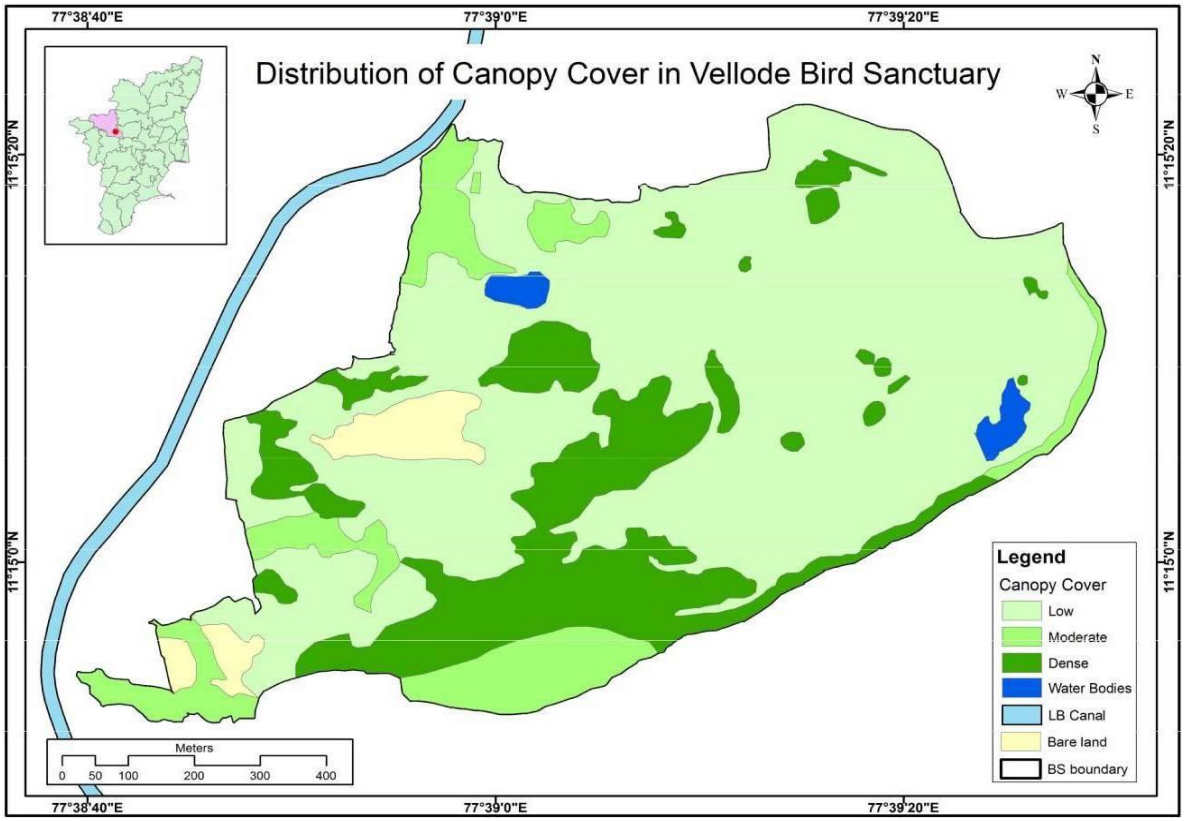




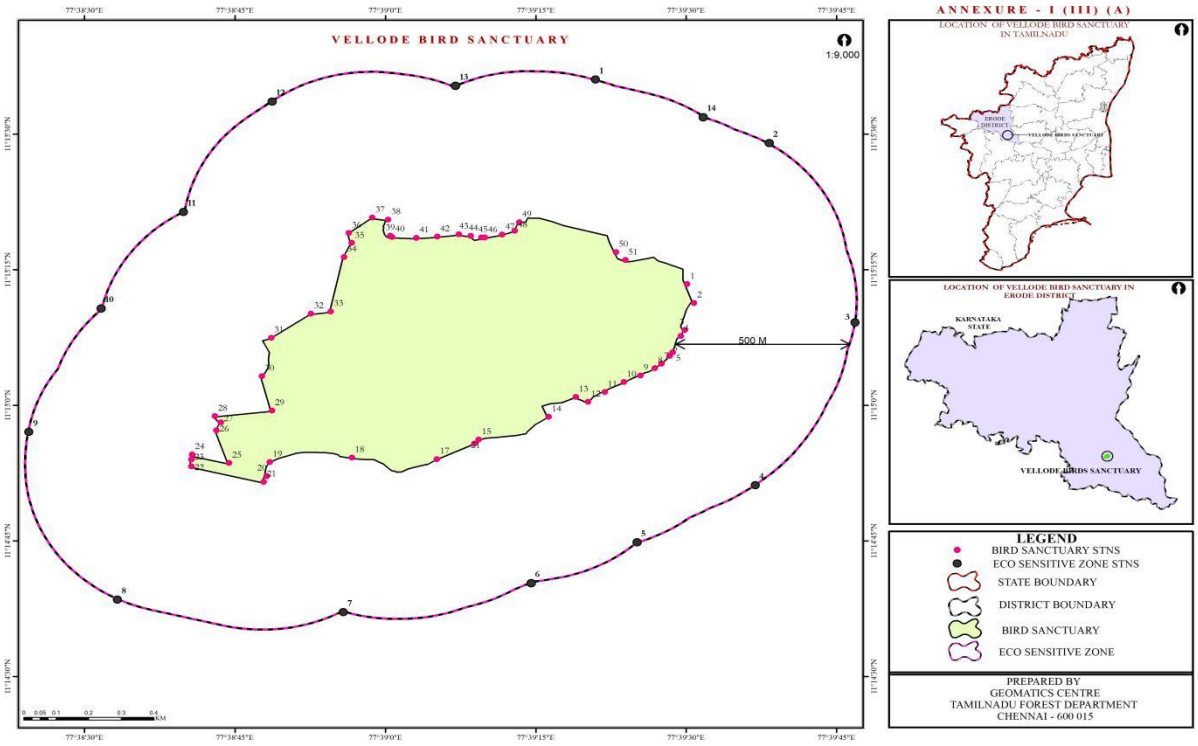
Map : 6 - CONTOUR MAPS OF VELLODE BIRDS SANCTUARY



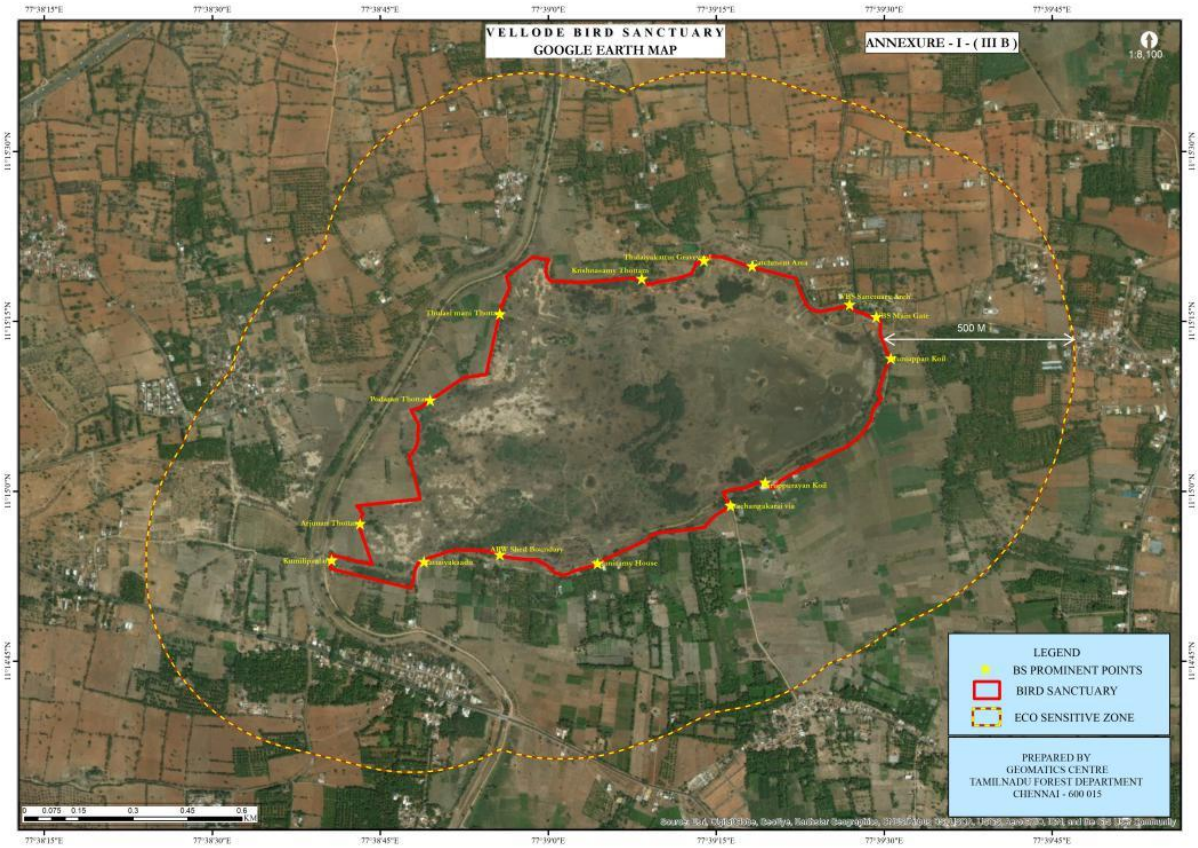
Map : 7 – MAP SHOWING WATER BODIES AROUND VELLODE BIRD SANCTUARY



Map : 8 – DISTRIBUTION OF CANOPY COVER IN VELLODE BIRD SANCTUARY



Map : 9 - PROPOSED ECOSENSITIVE ZONE OF VELLODE BIRDS SANCTUARY



Map : 10 - BOUNDARY MARKING USING GOOGLE IMAGERY