

**MANAGEMENT PLAN  
OF  
SHENDURNEY WILDLIFE SANCTUARY  
2012-13 to 2021-2022**

# CHAPTER 1

## INTRODUCTION TO THE AREA

### 1.1 NAME, LOCATION, CONSTITUTION & EXTENT OF AREA

Shendurney Wildlife Sanctuary owes its name to a tree, locally called “Chenkurinji”( *Gluta travancorica*) an endemic tree which is confined to this tract. The Sanctuary falls between 8<sup>0</sup>44’ and 9<sup>0</sup>14’N latitude and 76<sup>0</sup>59’ and 77<sup>0</sup>16’E longitude and is located in the Kerala state, Kollam district, Pathanapuram taluk. Shendurney was declared as a wildlife sanctuary as per notification no. G.O(P)258/84/AD dated 25-8-1984. The area was previously under the administrative control of Thiruvananthapuram Wildlife Division. Later, it was shifted to the administrative control of Thenmala Forest Division. However, for the better management of the sanctuary, a separate wildlife division namely Shendurney Wildlife Division was established as per notification no. G.O(Rt) 117/86/F&WLD dated 19-3-1996. The notified area of the sanctuary is 171sq.km.

### 1.2 APPROACH & ACCESS

Shendurney Wildlife Sanctuary lies south of Aryankavu valley and stretches to a length of about 25km east-west. The Sanctuary Headquarters is at Thenmala, 21kms from Punalur which is the nearest township. The sanctuary is located 75kms away from Thiruvananthapuram and 66kms from Kollam. KSRTC operates bus services to Thenmala at regular intervals from Thiruvananthapuram and Kollam. The nearest Airport is Thiruvananthapuram International Airport, 75kms away and nearest Railway Station is Punalur which is 21kms away from the sanctuary.

### 1.3 BOUNDARY DESCRIPTION & CONDITION OF BOUNDARIES

Shendurney Wildlife Sanctuary is having well defined natural boundaries. The reserve forests of Thenmala, Thiruvananthapuram, Punalur Forest Divisions and Thirunelveli Forest Division of Tamilnadu surrounds the sanctuary from all 4 sides. This tract is located in the western slope of Western Ghats, having well demarcated boundaries in the field and cairns have been constructed all along the boundary demarcating private estates and agricultural lands which are within the notified area but outside the forest area. There

are three private estates namely Rosemala, Kallar and part of Rockwood estate situated well inside the sanctuary. These private enclosures of about 877ha lie within the notified boundary of the sanctuary. The sanctuary boundary with the Rosemala estate is totally demarcated with solar fencing, while the boundaries with the other two estates are demarcated with cairns and barbed fence. Despite this, the presence of the estates within the sanctuary limits is hindering the effective management of the sanctuary components.

#### **1.4 ZONATION OF THE SANCTUARY**

The Sanctuary consists of three zones namely core, buffer and tourism. The **Core Zone** is a protected zone where human interference is strictly prohibited. It is situated in the eastern portion of the sanctuary and supports the prime wildlife habitats and dense vegetation having an extent of around 75.5sq.km which comprises nearly 44% of the area. The western boundary starts on the southern sanctuary boundary line at an elevation point of 1169m at Ambakallumottai and moves northwards through the boundary of Umayar touching the reservoir and further moves northwards through the reservoir boundary and stretches along the northern boundary of the reservoir till the point where Uruliyar falls into the reservoir, then moves northwards through the boundary of Uruliyar and touches the trekpath leading to Kannampallimedu and ends at the northern boundary of the sanctuary at Kannampallimedu. The areas coming under the core zone consists of Pandimotta, Alwarkurichi, Umayar, Aruliyar, Narathar, Dharbhakulam etc.

The **Buffer Zone** is located in the middle of the sanctuary sandwiched between the core zone in the east and tourism zone in the west. The buffer zone covers an area of about 47.13sq.km which is 27.6% of the total sanctuary area wherein part of the reservoir area is also included. The western boundary of buffer zone starts from the southern boundary of the sanctuary where the Rockwood estate meets with the sanctuary boundary and then moves northwards crossing Kunjumonthodu further northwards through stream branch and crosses the reservoir east of Idimuzhanganpara and goes northwards touching the northern boundary of the sanctuary at the elevation point of 780m at Thirthakara mala. The buffer zone consists of human inhabited areas viz. Rosemala and Kallar estates. Since the pressure of human population within the sanctuary pose severe conservational problems, the efforts should be directed towards their effective rehabilitation.

The western most portion of the sanctuary beyond buffer zone constitutes the **Tourism Zone**. It consists of an area of 48.35sq.km, which is about 28.20% of the total sanctuary area. The entry point to this sanctuary is in this zone. It consists of west coast semi-evergreen forest, reed brakes, southern secondary moist mixed deciduous forests and small patches of grasslands also. The major portion of the reservoir is falling in this zone. Only regulated tourism is permitted in this zone.

### **1.5 STATEMENT OF SIGNIFICANCE**

Shendurney Wildlife Sanctuary situated at Thenmala is a part of Agasthyamalai Biosphere Reserve and is one of the richest areas of biodiversity in the Western Ghats. The name Thenmala itself has a mystery in its name. According to the local language, 'Then' means 'honey' and 'mala' means 'hills', meaning honey hills. It is believed that the honey collected from Thenmala forests is of good quality possessing high medicinal values because of the unique floristic composition of the forests. The sanctuary is perhaps one of the well protected representatives of evergreen forest in the Western Ghats and houses significant populations of locally endemic species such as *Gluta travancorica*, *Cynometra bourdilonii* and *Palaquium bourdilonii*. The presence of the unique specialized habitat-the Myristica swamps, the undulating terrains, rocky mountains, variety in forest types, waterfalls, grasslands etc comprising of a wide variety of flora and fauna have earned Shendurney the tag of a heaven for nature lovers and bird watchers. The construction of the Parappan dam has resulted in the creation of an artificial lake of nearly 18.69sq.km within the sanctuary, which attracts a large number of water birds.

The etymological meaning of the name 'Shendurney' has been derived from a tree, locally called 'Chenkurinji' (*Gluta travancorica*) which is an endemic tree confined to this tract. Shendurney, lying on the western part of Agasthyamala-Ashambu hill ranges, along with the other contiguous forests in the Agasthyamala region forms one of the most important areas in the Western Ghats for the conservation of the endemic Lion Tailed Macaque. Other endemic mammals found here includes Nilgiri langur, Slender loris, Nilgiri Marten etc along with the globally threatened species such as Tiger and Elephant, which adds to the mammalian diversity of the sanctuary.

The sanctuary is home to an identified species of 1256 plants belonging to different families. A total of 35 species of mammals, 268 species of birds, 36 species of reptiles, 29 species of amphibians, 42 species of fishes, and 257 species of butterflies have been identified from the sanctuary. Shendurney has been designated as an important bird area owing to the presence of three globally threatened species such as the Little kestrel, Wood snipe, and the Nilgiri wood pigeon. Further, the sanctuary is a preferred site for long distance migrating species such as Tickell's leaf warbler, Large billed leaf warbler, Blue headed rock thrush and Rufous tailed flycatcher.

The boundary of the sanctuary roughly coincides with the watershed boundary of the Kallada reservoir, which is an important source of water for irrigation purposes in the districts of Kollam and Pathanamthitta. Hence the conservation of the forests in the hill ranges and catchment area is critical in maintaining the constant supply of quality water.

The **Thenmala Ecotourism Promotion Society**, a government organization registered under the Travancore-Cochin literary, scientific and charitable societies Act 1955 is coordinating and managing the ecotourism activities here. The society was registered in July 1998 and functions with the cooperation of Forest, Irrigation, and Tourism Departments. The **Thenmala Ecotourism Project**, the first of its kind in India is making use of the land and water area of the sanctuary adds colour to the prominence of the sanctuary and its role in nature education and promoting ecologically sustainable tourism. The **Deer Rehabilitation Center** managed by the Forest Department which houses Spotted and Sambar Deers attracts a large number of visitors. Along with this, the boating in the reservoir enables the tourists to discover the hidden fauna of Shendurney Wildlife Sanctuary. All these elements adds to the significance of the sanctuary and the need for the strict conservation of these forests.

# CHAPTER 2

## BACKGROUND INFORMATION & ATTRIBUTES

### 2.1 BOUNDARIES

#### 2.1.1 External

As per the Notification no. G.O(P) 258/84/AD dated 25-8-1984 the boundary description is as follows:-

**North:** The boundary starts from Thenmala ridge in the north behind the Divisional Forest Office and it passes towards east to Periyamaruthumala.

**East:** The boundary passes between the state boundary of Kerala and Tamilnadu through Periyamaruthimala and Karimala.

**South:** From Karimala the boundary runs along the southern boundary of the Division upto 5kms and then the boundary between natural forests and plantation till it reaches Kallada reservoir upto the dam site.

**West:** Here the boundary passes along the limits of the Reserve forests between Kallada dam and Thenmala Divisional Forest Office.

The Inter State boundary length is 21.8kms.

#### 2.1.1 Internal

No internal boundaries other than fire lines are demarcated on the ground. The sanctuary boundary with Rosemala estate is totally demarcated and solar fencing has been laid upon, while the boundaries with other two estates are demarcated with cairns and barbed fence. The Sanctuary is divided into three sections namely Ettappadappu, Kalamkunnu, and Kalluvarambu.

### 2.2 GEOLOGY, ROCK, SOIL

The underlying rocks are metamorphic consisting of charnokites and other gneisses. In the main ridges and slopes there are intrusions of huge masses of rocks of granite nature covering a considerable area in the most rugged form. Disintegration of granite gneisses form a very fine loam with a mixture of humus. This varies according to the position of the slope, shallow and stony along ridges, and deep and fine in the valley. Laterite is also found in varying degrees of disintegration from hard rock to fine gravel. The soil

along the stream and riverbanks is of alluvial deposits deep enough for luxuriant tree growth.

### **2.3 TERRAIN**

The elevation of the Shendurney Wildlife Sanctuary varies from 100-1550mAsl. This tract is a continuous stretch of vast, valuable forest area bounded on the east by the Sahyadri hills, which act as a great barrier separating the two states, Kerala and Tamilnadu. The sanctuary lies on either side of the Shendurney river and is located on the north of Kulathupuzha valley separated by Churuttumala ridge. The whole area is hilly in character with a gentle slope towards the west. The eastern portion near the high hills is very irregular being interspersed with ravines. There are a series of high peaks protruding from the main ridge, the highest of which is the Alwarkurichi peak(1550m). The upper slopes are rugged, steep and inaccessible in many places.

### **2.4 CLIMATIC ATTRIBUTES**

Climate is hot and humid with moderate rainfall received during both the monsoons.

#### **2.4.1 Rainfall**

Rainfall is received during both Southwest and Northeast monsoons. 75% of the precipitation occurs during the Southwest monsoon, from May to mid September with continuous rainy days accompanied by mild winds for several days resulting in floods. The Northeast monsoons are intermittent and usually occurs in the afternoons during the months of October and November which is followed by the dry easterly winds which are known to be violent causing damages to trees.

**TABLE 1: RAINFALL MONTH WISE(MM)**

<b>Month</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>January</b>	14.20	Nil	Nil	40	Nil	9	32.4
<b>February</b>	35	Nil	Nil	164.4	Nil	Nil	5
<b>March</b>	34.20	150.6	19	86.4	165	1.6	44.8
<b>April</b>	272.40	Nil	175.8	137	71.4	168.6	73.8
<b>May</b>	237.40	248.8	254.4	62.4	81.8	23.5	123.4
<b>June</b>	371	251.2	402.8	242.6	438	268.2	218.3
<b>July</b>	571.40	415.4	760	439.6	201.3	252	177.9

<b>August</b>	64.60	241.6	126	150	70.4	68	182.8
<b>September</b>	456.80	296.8	375.8	228.8	261.8	185.4	116.1
<b>October</b>	383.80	453.6	474.4	387.6	268	410.4	202.4
<b>November</b>	272.20	214.8	181.2	10.4	148	193	101.6
<b>December</b>	263.40	4.8	93.2	Nil	6.4	45	7.00
<b>TOTAL</b>	<b>2976.40</b>	<b>2277.60</b>	<b>2862.60</b>	<b>1949.20</b>	<b>1712.10</b>	<b>1615.70</b>	<b>1285.5</b>

Source: Irrigation Department

#### 2.4.2 Temperature

There is no appreciable variation in temperature, both seasonal and diurnal. The hottest months are March to May and the coldest, December and January. Summer rains bring down the temperature slightly during June and July. The maximum temperature during daytime in the hottest month of the year is about 33<sup>0</sup>C. The hot and humid climate favors luxuriant growth of vegetation in the tract.

**TABLE 2: TEMPERATURE MONTH WISE (Mean)<sup>0</sup>C**

<b>Month</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
January	27.8	34.1	27.3	34.8	29.6	30.3
February	29.1	33.8	29.2	35.5	31.4	32.6
March	30.3	24.5	31.2	31.4	30.5	32.8
April	29.8	26.2	33.4	28.1	30.2	32.9
May	30.4	26.1	35.5	27.4	30.8	32.8
June	27.9	26.8	33.7	27.7	31.0	28.2
July	28.2	26.1	30.1	26.8	29.5	28.6
August	31.9	26.5	33.3	27.9	29.6	29.1
September	32.5	26.5	33.5	28.4	30.0	29.7
October	32.6	27.3	33.6	28.3	30.2	29.8
November	33.3	26.8	33.2	28.8	30.6	30.1
December	27.0	27.5	33.4	29.1	29.8	30.4

#### 2.5 WATER SOURCES

The sanctuary consists of several natural and artificial water sources to meet the needs of the wildlife, in addition to the Kallada Dam (*Map 5*).

### 2.5.1 Natural Sources

The tract is drained by a good number of Rivers, namely Shendurney, Kazhuthurutti, Kulathupuzha and their tributaries. Besides, the Dam constructed across the River Kallada constitutes a reservoir extending over 18.69sq.km, is the major source of water in the sanctuary.

**TABLE 3:WATER LEVEL IN KALLADA RESERVOIR(Mts)**

Month	2005	2006	2007	2008	2009	2010
January	111.25	114.48	111.69	113.36	113.78	114.12
February	108.84	112.71	108.92	110.31	111.69	109.94
March	103.21	109.62	102.98	105.04	107.80	104.56
April	97.8	103.48	95.97	102.01	102.06	98.62
May	94.35	97.85	92.31	96.85	95.42	94.99
June	95.28	100.59	91.74	93.68	93.72	95.88
July	104.08	105.68	103.03	94.43	98.93	103.03
August	112.66	109.01	111.54	103.42	103.55	109.83
September	115.05	111.47	112.80	109.24	107.79	112.42
October	113.42	115.09	115.70	112.80	114.21	115.49
November	113.30	115.91	115.55	114.28	115.51	115.72
December	115.12	113.95	114.44	114.42	115.42	115.13

Source: Irrigation Department

### 2.5.2 Artificial Sources

Over the past few years, the following **water holes** have also been developed to augment water resources in the sanctuary. All these water holes are almost perennial and are permanently used by wild animals.

**TABLE 4:DETAILS OF EXISTING WATER HOLES**

Sl.no	Waterhole	Section	GPS Readings
1	Kuthirappara	Kalamkunnu	N 8 <sup>0</sup> 56' 46.9" E 77 <sup>0</sup> 04' 52.8"
2	Kuthiraalayam I	Kalamkunnu	N 8 <sup>0</sup> 56' 47.4" E 77 <sup>0</sup> 06' 04.3"
3	Kuthiraalayam II	Kalamkunnu	N 8 <sup>0</sup> 56'44.9" E 77 <sup>0</sup> 08'01.3"

4	Kuthiraalayam III	Kalamkunnu	N 8 <sup>0</sup> 56' 41.7" E 77 <sup>0</sup> 06' 03.4"
5	Kambakakkadu I	Kalamkunnu	N 8 <sup>0</sup> 56' 55.7" E 77 <sup>0</sup> 05' 55.1"
6	Kambakakkadu II	Kalamkunnu	N 8 <sup>0</sup> 55' 98.6" E 77 <sup>0</sup> 07' 59.7"
7	Mannanthara I	Kalamkunnu	N 8 <sup>0</sup> 57' 05.2" E 77 <sup>0</sup> 05' 20.5"
8	Mannanthara II	Kalamkunnu	N 8 <sup>0</sup> 57' 15.7" E 77 <sup>0</sup> 05' 22.1"
9	Idimuzhanganpara	Kalamkunnu	N 8 <sup>0</sup> 55' 55.5" E 77 <sup>0</sup> 07' 11.6"
10	Dharbhakulam	Eettapadappu	N 8 <sup>0</sup> 54' 49.7" E 77 <sup>0</sup> 12' 13.4"
11	Eerattumukku	Eettapadappu	N 8 <sup>0</sup> 52' 53.9" E 77 <sup>0</sup> 12' 33.5"
12	Mankuthu I	Kalluvarambu	N 8 <sup>0</sup> 54' 49.0" E 77 <sup>0</sup> 05' 43.3"
13	Mankuthu II	Kalluvarambu	N 8 <sup>0</sup> 54' 42.2" E 77 <sup>0</sup> 06' 21.3"
14	Mankuthu III	Kalluvarambu	N 8 <sup>0</sup> 54' 34.3" E 77 <sup>0</sup> 06' 18.5"
15	Mankuthu IV	Kalluvarambu	N 8 <sup>0</sup> 54' 30.1" E 77 <sup>0</sup> 06' 26.4"
16	Mankuthu V	Kalluvarambu	N 8 <sup>0</sup> 54' 24.1" E 77 <sup>0</sup> 06' 23.2"
17	Choodal I	Kalluvarambu	N 8 <sup>0</sup> 54' 48.1" E 77 <sup>0</sup> 05' 25.7"
18	Choodal II	Kalluvarambu	N 8 <sup>0</sup> 54' 45.7" E 77 <sup>0</sup> 05' 24.0"
19	Onnam mile I	Kalluvarambu	N 8 <sup>0</sup> 54' 40.4" E 77 <sup>0</sup> 06' 49.1"
20	Onnam mile II	Kalluvarambu	N 8 <sup>0</sup> 54' 35.3" E 77 <sup>0</sup> 06' 04.0"
21	Onnam mile III	Kalluvarambu	N 8 <sup>0</sup> 54' 27.6" E 77 <sup>0</sup> 06' 53.3"
22	Marappalam I	Kalluvarambu	N 8 <sup>0</sup> 53' 25.2" E 77 <sup>0</sup> 07' 08.6"
23	Marappalam II	Kalluvarambu	N 8 <sup>0</sup> 53' 34.9" E 77 <sup>0</sup> 07' 13.2"
24	Marappalam III	Kalluvarambu	N 8 <sup>0</sup> 53' 37.6" E 77 <sup>0</sup> 07' 17.5"
25	Kambakakkadu I	Kalluvarambu	N 8 <sup>0</sup> 53' 52.8" E 77 <sup>0</sup> 06' 10.4"
26	Kambakakkadu II	Kalluvarambu	N 8 <sup>0</sup> 53' 54.7" E 77 <sup>0</sup> 07' 13.6"

27	Kambakakkadu III	Kalluvarambu	N 8 <sup>0</sup> 53' 52.2" E 77 <sup>0</sup> 07' 39.3"
28	Kambakakkadu IV	Kalluvarambu	N 8 <sup>0</sup> 53' 49.6" E 77 <sup>0</sup> 07' 40.9"
29	Kambakakkadu V	Kalluvarambu	N 8 <sup>0</sup> 54' 02.6" E 77 <sup>0</sup> 07' 29.5"
30	Kambakakkadu VI	Kalluvarambu	N 8 <sup>0</sup> 54' 12.0" E 77 <sup>0</sup> 07' 23.3"
31	Koovachal(Thavalakulam)	Kalluvarambu	N 8 <sup>0</sup> 50' 46.3" E 77 <sup>0</sup> 10' 35.7"

## **2.6 RANGE OF WILDLIFE, STATUS, DISTRIBUTION & HABITAT**

### **2.6.1 VEGETATION**

The Sanctuary is located at the northern most end of Agasthyamalai Biosphere Reserve and is the threshold of the Agasthyamalai hill ranges, noteworthy for its rich biodiversity of flora and local endemism. The continuity of Agasthyamalai hill ranges to the adjoining **Pandalam** hill ranges is through a narrow passage of the sanctuary and Thenmala Forest Division. The vegetation shows an abrupt and drastic change from the sanctuary onwards. Many plants of relatively high dominance in northern part of this tract could not be traced out from this point towards the southern regions. Likewise many local endemic species of Agasthyamalai region are also absent from this tract onwards to northern region, eg. *Gluta travancorica*.

Vegetation of the area could be classified into

- **West Coast Tropical Evergreen Forest**
- **West Coast Tropical Semi Evergreen Forest**
- **Southern Hilltop Tropical Evergreen Forest**
- **Southern Subtropical Hill Forest**
- **Southern Secondary Moist Mixed Deciduous Forest**
- **Ochlandra Reed Brakes**
- **Myristica Swamp Forest**
- **Grasslands.**

#### **2.6.1.1 West Coast Tropical Evergreen Forests**

This type of forest is found usually at elevations between 240 m to 1100 m and may extend sometimes even up to 1350 m with some variation in floristic composition. This

forest type forms the major vegetation of the sanctuary and is found at Rosemala, Kallar, Pandimotta and along the banks of Umayar and Uruliyar.

The **upper storey** consists of *Dipterocarpus indicus*, *Calophyllum polyanthum*, *Mesua ferrea*, *Mangifera indica*, *Artocarpus heterophyllus*, *Vateria indica*, *Hopea parviflora*, *Palaquium ellipticum*, *Cullenia exarillata*, *Terminalia bellerica*, *Gluta travancorica* etc.

The **middle storey** consists of species such as *Garcinia spicata*, *Elaeocarpus serratum*, *Cinnamomum verum*, *Gordonia obtusa*, *Baccaurea courtallensis*, *Canarium strictum*, *Hydnocarpus alpinia* etc. The **lower storey** comprises of species such as *Goniothalamus rhynchantherus*, *Miliusa wightiana*, *Meiogyne ramarowii*, *Orophea uniflora*, *Erythroxylum lanceolatum*, *Acronychia pedunculata*, *Aglaiia simplicifolia*, etc. The shrubby plants are mostly *Dichapetalum gelonioides*, *Strobilanthus ssp.*, *Lasianthus ssp.*, *Glycosmis macrocarpa*, *Alpinia malaccensis*, *Leptonychia caudate*, *Clausena austroindica*, *Phaeanthus malabarica*, *Popowia beddomea*, *Tabernaemontana gamblei*, etc.

#### **2.6.1.2 West Coast Topical Semi Evergreen Forests**

This type of forest is intermediate between the tropical evergreen and moist deciduous and generally considered as a transitional stage from evergreen to moist deciduous. It is found between 600 to 800 m elevation and in some areas descends up to 500 m. These may be mainly due to the change in environment or human interference or both. This type of the forest in the sanctuary is found adjoining the evergreen forest, mostly along the lower slopes which were subjected to heavy human interferences in the past. This forest type is found in the Pallivasal and Pullubetha areas of Rosemala, Kattilappara, Kallar, Choodal and Kalluvarambu.

The West Coast Semi-evergreen Forest accordingly forms a close high forest, the dominant trees sometimes running to big dimensions but is usually inferior to that of the Tropical Evergreen. This forest type includes both the evergreen and deciduous trees, with the evergreen species dominating. The bigger trees continue to be frequent in this forest and occur in both evergreen deciduous trees. The bark tends to be thick and rough. The density of the canopy in this type is less than that of the evergreens, but the canopy is

well developed with stratification. Climbers are seen in abundance and the undergrowth is more of coppice. The epiphytes usually met with are chiefly ferns and orchids. The **upper storey** comprises of species such as *Dipterocarpus indicus*, *Mangifera indica*, *Madhuca bourdillonii*, *Tetrameles nudiflora* *Syzygium cumini*, *Elaeocarpus tuberculatus*, *Artocarpus hirsutus*, *Alstonia scholaris*, *Artocarpus heterophyllus*, *Baccaurea courtallensis*, *Calophyllum apetalum*, *Carallia brachiata*, *Madhuca neriifolia*, *Vateria indica*, etc, while **middle storey** comprises of *Buchanania lanceolata*, *Diospyros Montana*, *D.foliola*, *D.paniculata*, *D.candolleana* , *Vitex altissima* etc.

The **lower storey** comprises of *Orophea erythrocarpa*, *Capparis rheedei*, *Clausena pubescens*, *Canthium umbellatum*, *Aidia gardneri*, *Memecylon talbotianum*, *M.deccanense*, *Syzygium mundagam*, *Blepharistemma serratum*, *Canthium pergracile*, *Archidendron monadelphum*, *Tarenna asiatica*, *Ixora brachiata*, etc. The shrubby layer is composed of *Hibiscus lunariifolius*, *Glycosmis pentaphylla*, *Cipadessa baccifera*, *Turraea villosa*, *Gomphandra tetrandra*, *Leae guineensis*, *Allophylus concanicus*, *Psychotria ssp.*, etc.

### **2.6.1.3 Southern Hilltop Tropical Evergreen Forests**

This type of forest is a stunted evergreen forest found on top of hills, ridges and is floristically rich found in the upper portion of Kallar, beyond Pandimotta and in certain pockets near interstate boundary. This type of forest is confined to altitude ranging between 1000m to 1300m above sea level. It is more or less an inferior edition of the wet evergreen forests of lower elevations. The height of trees seldom exceeds 20m and are heavily festooned with mosses, lichens and ferns. Although species like *calophyllum* are found here, height of trees are much lesser with shorter boles and crowns somewhat rounded with crooked branches. Trees don't attain much height mainly due to high wind velocity and less favourable soil conditions. At an elevation of 1200m to 2000m, a transition may be found between this type of forest and the tropical wet evergreen forests. The dominant species are mainly *Calophyllum polyanthum*, *Cinnamomum sulphuratum*, *Hydnocarpus alpine*, *Casearea macrocarpa*, *Elaeocarpus munronii*, *Garcinia cowa*, *Memeceylon sp*, *Syzygium sp*, *Litsea inegnis*, *Litsea oleoides*, *Litsea wightiana*, *Litsea coriacea*, *Actinodaphne malabarica*, *Neolitsea scrobiculata* etc.

The **upper storey** primarily consists of *Mesua nagassarium*, *Elaeocarpus tuberculatus*, *Gluta travancorica*, *Ficus tsjahela*, *Artocarpus heterophyllus* while the medium sized trees in the **middle storey** are the younger form of upper storey along with species such as *Syzygium cuminii*, *Cinnamomum verum*, *Carallia brachiata* etc. Shrubs and herbs like *Crotalaria calycina*, *Asystasia dalzelliana*, *Nilgirianthus heyneanus*, *Nilgirianthus warreensis*, *Leucas vestita* form the **lower storey**. The climbers commonly found are *Piper trioicum*, *Dioscorea wallichii*, *Elaeagnus conferata*, *jasminum cordifolium* while epiphytes like *Robiquetia rosea*, *Sirhookera latifolia*, *Remusatia vivipara*, *Dendrobium wightii* etc are also seen in this type of forest.

#### **2.6.1.4 Southern Sub-tropical Hill Forests**

The sub tropical vegetation exhibits a transitional zone between tropical and temperate vegetation. This forest type is more or less ecotonic or transitional in nature. The floristic elements consist of a mixture of those found in the tropical forests and those of the montane temperate forests- the former element usually predominating. The vegetation is not very luxuriant. The trees are shorter and with less shapely boles and festooned with herbaceous and cryptogamic epiphytes. The low stature of trees is mainly due to elevation, the high velocity of wind, and less favourable soil conditions. This type of forest is mainly confined to places above 1300m elevation at Pandimotta and Alwarakurichi. The trees are *Aglaia bourdillonii*, *Poeciloneuron indicum*, *Meliosma pinnata ssp. Arnottiana*, *Vernonia travancorica*, *Garcinia travancorica*, *G.imberti*, *G.rubroechinata*, *Actinodaphne campanulata*, *Turpinia nepalensis*, *Ardisia rhomboidea*, *Syzygium rubicundum*, *Bhesa indica*, *Elaeocarpus venustus*, *Eugenia discifera*, etc. The lower shrubby layer is composed of *Octotropis travancorica*, *Ardisia blatteri*, *Symplocos wynaadense*, *Goniothalamus wightii*, *Polyscias acuminata*, *Strobilanthus asper*, *S.luridus*, *S.tristis*, *Euonymus paniculatus*, etc.

#### **2.6.1.5 Southern Secondary Moist Mixed Deciduous Forests**

This is a closed high forest type with dominant species being primarily deciduous, which are mostly pronounced light demanders reaching up to a height of 30-35 m and with few evergreen species confining to the lower storey. This type of forest is found in almost all parts of the sanctuary mainly below 600m. The evergreen species confined to the lower storey gives the forest as a whole a more or less evergreen appearance most of the year,

but their frequency of distribution is far too less. The chief feature of the moist deciduous forest is a leafless period in the dry season. During this season, the upper canopy is almost entirely leafless though there is often a good sprinkling evergreen in the undergrowth and shrub cover. Compared to the moist mixed deciduous forests and the secondary moist teak-bearing forests, secondary moist mixed deciduous forest area receives high rainfall. This region has the microclimate to support the evergreen forest. Bamboo is commonly seen in lowland areas near reservoir. Epiphytes are seen. Lianas are abundant. The trees mostly have rounded crown and tall cylindrical bole. Buttress formation is visible in some species. The trees in this type generally have thick bark, mostly fibrous and fissured in multi-shapes. The characteristic feature of the moist deciduous forest is the leafless period in the dry season (March-April). An appreciable number of the deciduous trees, however, come into new leaf (and often flower) long before the monsoon when one would expect them to experience water stress.

This forest type is mostly confined to the low elevation places at Thenmala, Kattilappara and Rosemala. The trees in the **upper storey** are *Pterocarpus marsupium*, *Terminalia paniculata*, *T.crenulata*, *T.bellirica*, *Lagerstroemia microcarpa*, *Tetrameles nudiflora*, *Sterculia guttata*, *Bombax ceiba*, *Hymenodictyon orixense*, *Dalbergia sissooides*, *Dillenia pentagyna*, *Bridelia airy-shawii*, *Stereospermum colais*, *Grewia tiliifolia*, etc while the **middle storey** is comprises of *Lannea coromandelica*, *Hymenodictyon obovatum*, *Alstonia scholaris*, *Strychnos nux-vomica*, *Buchanania lanzan*, *Careya arborea*, *Miliusa tomentosa*, *Pongamia pinnata*, *Phyllanthus emblica*, *Macaranga peltata*, *Olea dioica*, etc. In the **lower storey** are *Wrightia tinctoria*, *Naringi crenulata*, *Mallotus philippensis*, *Chionathus mala-elengi*, *Catunaregam spinosa*, *Tabernaemontana heyneana*, *Callicarpa tomentosa*, *Helictres isora*, *Holarrhena pubescens*, *Cipadessa baccifera*, etc.

#### **2.6.1.6 Reed Brakes**

Some of the hillocks in the Pandimotta and Alvarkurichi have dense growth of reeds sometimes growing as pure patches. Thick reed brakes are also seen in the lower valleys, along the streams and fire burnt areas. Important species are *Ochlandra travancorica* var. *hirsute*, *O. ebracteata*, *O. scriptoria* and *O. wightii* of which *Ochlandra travancorica* var. *hirsutea* and *O. scriptoria* are found in the higher riches. The palm, *Bentinckia*

*condapanna* is also seen growing gregariously along the hills of Pongumala, often covering the hillocks at Pandimotta.

#### **2.6.1.7 Myristica Swamp Forests**

This is a characteristic edaphic formation found in the bottom of valleys, which is subjected to inundation throughout the year. It is a unique forest type found exclusively in the plains and low elevations of the southern most part of the Western Ghats. These swamps are more localized and are seen only in the poorly drained regions with a very long rainy season. It is restricted to the sluggish streams as fringing forest below 300m elevations. The characteristic feature of this forest type is the abundance of the species of Myristicaceae family, particularly two species that are not common under other conditions, viz., *Gymnacranthera farguhariana* and *Myristica fatua magnifica*. These forest types are found in areas like Mankuthu, Onnam Mile, Choodal, Pappamkuzhy, Vilakkumaram etc.

The height of the forest is usually about 25 to 30m and the trees have comparatively clean and slender boles. The other common species are *Gymnacranthera farguhariana*, *Myristica dactyloides*, *Myristica malabarica*, *Myristica fatua*, *Knema attenuata*, *Calophyllum apetalum*, *Syzygium mundagam*, *Persea macrantha*, *Vateria indica*, *Carallia brachiata*, *Lophopetalum wightianum*, etc. On the edges of this forest are found *Mesua nagasarium*, *Holigarna arnottiana*, *Dimocarpus longan*, *Scolopia crenata*, *Hopea parviflora*, *Humboldtia vahliana*, etc. This type of forest was first reported by Krishnamoorthy (1960) in the valleys of Shendurney, Kulathupuzha and Anchal ranges of Travancore. Champion and Seth (1968) have classified them into the subgroup 'tropical fresh water swamp forests'. These swamps, because of their location in low altitude, are under tremendous biotic pressure and their conservation is a challenging task and subjected to heavy degradation in various ways.

#### **2.6.1.8 Grasslands**

Grasslands with sparse tree growth as well as pure patches of grasslands occur in the sanctuary to a limited extent. The former are mostly confined to the hills above Dharbhakulam along the Suchimala hills and the latter between the evergreen patches. Secondary grass growth is observed at Pullumeth near Rosemala settlement and is dominated by *Pennisetum typhoides*. The dominant species in the grassland region of this

sanctuary are *Chrysopogon hackelii*, *Cymbopogon flexuosus*, *Cyrtococcum longipes*, *Digitaria ciliaris*, *Eleusine indica*, *Panicum maximum*, *Pogonatherum crinitum*, *Pseudanthistiria umbellata*, *Setaria intermedia*, *Themeda cymbaria*, *T. triandra*, *Alloteropsis cimicina*, *Apluda mutica*, *Aristida stacea*, *Arundinella leptochlora*, *Chloris barbata*, *Cynodon dactylon*, *Jansenella griffithiana*, etc.

### **2.6.2 WILDLIFE**

Wildlife is abundant in the Sanctuary. These wildlife enrich the beauty and bring in diversity in life. Some recent survey reports reveal that the Sanctuary has immense faunal and floral wealth. This helps to maintain the environmental balance of nature with high potential in recreation and aesthetic values.

**Mammals:** A total of 35 species of mammals including large and smaller ones are identified in Shendurney Wildlife Sanctuary. Among this Nilgiri langur, Lion-tailed macaque, Nilgiri Marten and Brown palm civet are endemic to Western Ghats.

**Reptiles:** 36 species of reptiles were recorded from Shendurney Wildlife Sanctuary. Of these, *Calotes elliotti*, *Ristella beddomii* and *Brachiophidium rhodogaster* are endemic to Western Ghats.

**Amphibians:** A frog survey was conducted in the Sanctuary from 2008 to 2011. A total of 45 species of frogs under 15 genera belonging to 8 families were recorded during the survey. Out of the 45 species, 38 are strictly endemic to Western Ghats.

**Fishes:** 42 species of fishes were identified in Shendurney Wildlife Sanctuary. *Batasio travancoria*, *Parambassis thomassi* are the species endemic to Kerala. *Batasio travancoria* and *Tor kudree* are the endangered species seen in Shendurney and associated streams.

**Birds:** Shendurney has also been designated as an important bird area owing to the presence of three globally threatened species, the Lesser Kestrel, Wood Snipe, Nilgiri wood pigeon and also because of the presence of 10 of 16 bird species endemic to the Western Ghats. A total of 266 species of birds have been recorded here. From 1996 onwards yearly birds surveys has been carried out in the Sanctuary till 2012. Records of nesting colonies of River tern and Small Indian Pratincole have been made from this Area. Recent bird surveys reported nesting of the Lesser Fish Eagle in the sanctuary, till recently this bird was supposed to be confined to the Himalayan foot hills. The

Sanctuary is also an important wintering site for long distance migrants such as Tickell's leaf warbler, Large billed leaf warbler, ?Blue headed Rock thrush and Rufous tailed flycatcher.

**Butterflies:** The butterfly diversity of the Sanctuary is found impressive. An impressive 257 species of butterflies out of the 334 known species from Western Ghats were ecorded including 23 endemic species. The notable records are Travancore Evening Brown *Parantirrhoea marshallii*, Golden Tree flitter *Quedarabasiflava* and Spotted Angle *Caprona agama* , Black prince *Rohana parisatis* and the rare *Arnetta mercara* Coorg Forest hopper. Thus TNHS had already made a checklist of 257 species of butterflies in the sanctuary by a decade long observation at different seasons. There are 334 species of butterflies recorded in the whole of Western Ghats and with this survey the total number of species observed at Shendurney Wildlife Sanctuary will go up to 263 species including 25 Western Ghats endemics, making the sanctuary one of the richest butterfly-diverse areas in the whole of Western Ghats. It is planned that by a series of follow up surveys in different seasons, more species will be added to this checklist.

### **2.6.3 IDENTIFICATION OF HABIT & HABITAT USE BY WILDLIFE**

Healthy population of Gaur and Elephants are present in the sanctuary. Except for the dense evergreen forests where the Lion Tailed Macaque and Nilgiri Langur are exclusively found, other wildlife are encountered in almost all other parts of the sanctuary. The Kallada reservoir and the aquatic ecosystem thus formed attracts a large number of water birds too. The Sanctuary harbour a several species of frogs, reptiles, butterflies, birds etc each of them have to be study in detailed for getting a overall picture for the habitat utilization.

# CHAPTER 3

## **HISTORY OF MANAGEMENT & PRESENT PRACTICES**

### **3.1 HISTORY OF SANCTUARY ESTABLISHMENT & MANAGEMENT**

Shendurney was declared as a Wildlife Sanctuary as per Notification No. G.O(P)258/84/AD dated 25-8-1984 and is the only Wildlife Sanctuary in Kollam district. The area was previously under the administrative control of Thiruvananthapuram Wildlife Division. Later, it was shifted to the administrative control of Thenmala Forest Division vide G.O(MS)41/91/F&WLD dated 21-5-1991. However, for the better management of the sanctuary, a separate Wildlife Division namely Shendurney Wildlife Division was established as per Notification no. G.O(Rt)117/86/F&WLD dated 19-3-1996 comprising of Shendurney and Peppara Wildlife Sanctuaries. The post of Assistant Wildlife Warden was upgraded to that of Wildlife Warden, Shendurney and the post of Range Officer, Agasthyavanam Biological Park Division was diverted and transferred to this division as Assistant Wildlife Warden, Shendurney. In 1998, Peppara was carved out and added on to Thiruvananthapuram Wildlife Division leaving only Shendurney Sanctuary in the Shendurney Wildlife Division. . The notified sanctuary area is 171sq.km. No timber harvesting was allowed after the declaration of the tract as a wildlife sanctuary. There is no plantation of exotic species except the marginal Eucalyptus plantation outside the sanctuary.

### **3.2 REVIEW OF PAST MANAGEMENT PLANS**

The First Management Plan for Shendurney Wildlife Sanctuary was from the period 1990-91 to 1999-2000. The objectives of the plan were inadequate to address issues relating to conservation, research, development, training etc. No importance was given to collection of data for developing a better plan on both floral and faunal components, rainfall, climate, habitats and their use by wildlife, vegetation mapping, etc. More than this the first plan had lot of drawbacks in addressing the important issues of the sanctuary. Taking into account all this factors, the Second Management Plan was

prepared for the period 2002-03 to 2011-12. The main objectives of the plan were Maintaining the vegetation of the landscape from further fragmentation and restoration of the degraded area, Conservation of biodiversity, Promoting research for education and management of the sanctuary. Promoting nature based regulated tourism, Enhance capacity building through development of skill and knowledge in wildlife management, Promotion of Participatory Ecodevelopment programmes. During this plan period, many of the objectives were fulfilled to a great extent though not all the objectives were fulfilled successfully due to the lack of appropriate funds. The major achievements of the plan are:

- Fruit bearing trees and other native species such as bamboo, caryota, cane etc were planted with the involvement of EDC's as step for restoring the degraded areas
- Habitat improvement activities were carried out in the Myristica swamp habitat along with planting of Chenkurinji trees in certain places. Fire protection activities and soil moisture conservation works were carried out for the entire plan period, along with planting medicinal species inside the sanctuary
- Research activities were carried on several sanctuary components by various institutions. As a step to create awareness and nature education, Nature camps were conducted in regular manner especially for school and college students
- For the promotion of nature based tourism, protection oriented soft trekking programmes were introduced by EDC's inside the sanctuary
- Training programmes and seminars were conducted for both staff and EDC members as a step for capacity building and improving the staff quality. 9 EDC's were formed for promoting participatory eco development programmes
- Effective protection measures were carried out during the plan period. Protection mazdoors were engaged in different protection activities including night patrolling along with staff which helped in reducing activities such as poaching, illicit felling, fishing etc. 6 Anti poaching camp sheds were constructed ( Idimuzhangampara, Rockwood, Pandimotta, Umayar, Dharbhakulam, Pattakulam) in the remote areas of the sanctuary, wherein staff and protection watchers used to stay and perambulate the area

- Trek paths and roads were maintained with the available funds for effective patrolling and for fire protection, fire watchers were engaged and fire lines were traced during this period. Even though shortage of funds stood as a barrier, other activities like construction of kayyalas, elephant proof trenches, permanent cairns, solar fencing, solar lamps etc were carried out
- The sanctuary boundary with the Rosemala estate is totally demarcated with solar fencing, while the boundaries with the other two estates are demarcated with cairns and barbed fence.

**TABLE 5: DETAILS OF WORKS COMPLETED**

<b>YEAR</b>	<b>AREA</b>	<b>QTY</b>
<b>CONSTRUCTION OF KAYYALA</b>		
2002-03	NIL	NIL
2003-04	NIL	NIL
2004-05	Kallar	448 RM
	Total	448 RM
2005-06	Rosemala-Vilakkumara	200 RM
	Hajiyarkuzhy	200 RM
	Nellikunnu	400 RM
	Pallivasal	200 RM
	Total	1000 RM
2006-07	Enippara area	400 RM
	Kallar area	275 RM
	Around Rosemala enclosure	150 RM
	Total	825 RM
2007-08	Kallar area	350 RM
	Elavumoodu area	50 RM
	68 <sup>th</sup> kuzhi-Rockwood	150 RM
	Total	550 RM
2009-10	Construction of Chappath at Marappalam	1 No.
<b>CONSTRUCTION OF PERMANENT CAIRNS</b>		
2003-04	At Kattilappara	100 Nos.
	Rosemala	60 Nos.
	Recontstruction of old permanent cairns at Kallar-Kattilappara	116 Nos.
2004-05	Constrn. of permanent cairns at Vilakkumara area	30 Nos.

	Reconstruction of old permanent cairns at Rosemala-Choodal	50 Nos.
2009-10	Construction of Chappath at Marappalam	1 Nos
2005-06	Construction of permanent cairns Mannanthara-Enippara area	40 Nos.
2006-07	Constrn. Permanent cairns at Kattilappara area	28 Nos.
	-do- at Enippara area	30 Nos.
2007-08	Construction of permanent cairns at Kallar area	53 Nos.
<b>SOLAR HOME LIGHTING SYSTEM</b>		
2003-04	Guard Station Rosemala	
	Picket Station Rosemala	
	Picket Station Kallar	
2004-05	Cummunity Hall, Kattilappara	
	Antipoaching Camp Shed , Rockwood	
	-Do- Dharbhakulam	
	-Do- Umayar	
2005-06	-Do- Pandimotta	
2007-08	Solar Power fencing around Rosemala enclosure	350 mtr.
2009-10	Installation of 4100m 6 line Solar power fencing around Kattilappara enclosure	4100m
2010-11	6 stranded solar power fencing around nature study centre, Kattilappara	100 RM
<b>ELEPHANT PROOF TRENCH</b>		
2003-04	Pandimotta area	311.6 m3
	Umayar Antipoaching camp shed	429.33 m3
2004-05	Picket Station Pallivasal	385.42 m3
	Anti poaching camp shed at Rockwood	332.37m3
2006-07	Anti poaching camp shed at Idimuzhanganpara area	552 m3
2010-11	Construction of retaining wall to elephant proof trench at Anti poaching camp shed at Rockwood	16.366 m3
<b>HABITAT IMPROVEMENT</b>		
2003-04	Raising fruit bearing tree species nursery at Rosemala	0.05 Ha
2004-05	Augumenting fruit bearing tree species already treated area in Idimuzhanganpara	17.80 Ha

	Augumenting Bamboo, caryotta & other mise. Species at Samaramukku area	4.68 Ha
	-Do- at Perumpara area of Kalluvarambu section	7.7 Ha
2005-06	Raising medicinal plantation at Pallivasal area	8 Ha
	Raising basketted bed Chenkurunji Nursery at Pallivasal	0.10 Ha
2006-07	Raising medicinal plantation in degraded area 7 <sup>th</sup> block , Kalamkunnu section	13 Ha
2007-08	Mikenia eradication at Rosemala	13 Ha
	-Do- Mulamtheri area Kalluvarambu section	21 Ha
	Protection of myristica swamp area at Vilakkumaram –mankuthu area	4000 Nos.
	-Do- Mannanthara area	4000 Nos.
2008-09	-Do- at Kattilappara	2700 Nos.
2004-05	Shendurney Wildlife Division office compound wall	
	Community hall at Kattilappara (completion)	
2005-06	Construction of retaining wall at Wildlife Warden's Quarters	

- 30-35kms of trek paths and 100-125kms of fire lines are maintained annually according to the availability of funds

### **3.3 TIMBER OPERATIONS INCLUDING BAMBOO & FIREWOOD HARVEST**

#### **3.3.1 Timber Operations/Firewood Collection**

There are no timber operations in the sanctuary. However, collection of firewood still occurs to a certain extent. The unscientific collection practices of NWFP have caused severe damage to the ecosystem in the past. However after fencing the sanctuary boundary with the estates, and through the active participation of EDC's, this problem was reduced to a large extent.

### **3.4 FOREST PROTECTION**

#### **3.4.1 Illegal Removal, Poaching, Encroachments**

Illegal activities are very less. However such practices can still be rarely observed in areas near private estates and forest fringes. Incidents of poaching have been reported

from the sanctuary in the past. Poaching cases of gaur, elephant, sambar deer etc have been reported in the past from areas such as Pandimotta and the Kerala-Tamilnadu border. It is reliably learnt poaching and smuggling gangs from Tamilnadu are entering the sanctuary through illegal entry points from Dharbhakulam, Pandimotta etc. Inaccessibility of these regions with lack of infrastructure seriously affects the monitoring of border areas and the overall sanctuary protection. Along with the existing 6 Anti Poaching Camp Sheds at (Idimuzhangampara, Rockwood, Pandimotta, Umayar, Dharbhakulam and Pattakulam) one new camp shed is proposed at Thengunthoppu. Considering the extent of the area, the plan proposes to upgrade the two Forest Sections into two Forest Stations, the one being Kallar Forest Station comprising the whole of Kalluvarambu Section(90sq.km) and Rosemala Forest Station comprising whole areas of Eettappadappu Section and Kalamkunnu Section(81sq.km) which is very much essential for the effective protection and management of the sanctuary. There is also a need to persuade the people living in the estates and forest fringes to surrender the weapons with the help of EDC's.

**TABLE 6:DETAILS OF FOREST OFFENCES DURING 2002-2011**

<b>Year</b>	<b>KF Act</b>	<b>WLP Act</b>	<b>Total</b>
<b>2002</b>	6	0	<b>6</b>
<b>2003</b>	0	0	<b>0</b>
<b>2004</b>	4	2	<b>6</b>
<b>2005</b>	3	1	<b>4</b>
<b>2006</b>	1	0	<b>1</b>
<b>2007</b>	3	1	<b>4</b>
<b>2008</b>	1	0	<b>1</b>
<b>2009</b>	0	0	<b>0</b>
<b>2010</b>	1	0	<b>1</b>
<b>2011</b>	1	0	<b>1</b>
<b>Total</b>	<b>20</b>	<b>4</b>	<b>24</b>

### **3.4.2 Grazing**

Livestock grazing in the sanctuary was a major threat and headache for the authorities. People living in the estates and forest fringes possessed large number of cattle and used to set free the animals into the forests for grazing. This not only reduces the fodder supply for wild herbivores but can also lead to the outbreak of diseases like foot & mouth, anthrax etc. However during the previous plan period, the sanctuary boundary with the Rosemala estate was totally demarcated with solar fencing, while the boundaries with the other two estates were demarcated with cairns and barbed fence. This helped reduce the threat to a large extent. Apart from this, with the cooperation of Veterinary department vaccination of the local cattle is being done periodically, though not all the cattle are vaccinated. However, by promoting stall feeding and giving alternate income generating activities to these people through EDC's and through various other programmes, this problem can be solved permanently.

### **3.4.3 History of Wild Fires & Fire Management**

Fire is one of the serious problems faced by the Sanctuary during the dry season. Poachers, smugglers, people residing in the private estates, and pilgrims visiting Pallivasal are primarily responsible for fire incidents in the Sanctuary. Though monitoring blocks are established for managing fires, it was found ineffective due to inadequate knowledge and skill in reporting, recording and taking necessary preventive measures. Not much importance was given to fire management in the early periods. However, in recent times the concept of fire management with the involvement of EDC's has gained substantial improvement and is showing positive results. Details of fire reports from the year 2007 to 2012 are given below.

**TABLE 7: DETAILS OF FIRE INCIDENTS**

<b>Sl.no</b>	<b>Year</b>	<b>Section</b>	<b>Area</b>	<b>Area burnt</b>
1	2007-08	Kalamkunnu	Nil	Nil
		Eetapadappu	Nil	Nil
		Kalluvarambu	Nil	Nil
2	2008-09	Kalamkunnu	13Kannara	.5ha
		Eetapadappu	Nil	Nil
		Kalluvarambu	Nil	Nil

3	2009-10	Kalamkunnu	Idimuzhangampara	.5ha
		Eetapadappu	Nil	Nil
		Kalluvarambu	Nil	Nil
4	2010-11	Kalamkunnu	13Kannara	.5ha
		Eetapadappu	Nil	Nil
		Kalluvarambu	Nil	Nil
5	2011-12	Kalamkunnu	Nil	Nil
		Eetapadappu	Enipara, Edapady	1.75ha
		Kalluvarambu	Nil	Nil

Till now fire tracing and fire watchers were engaged at fire prone areas while fire fighting gangs were engaged to patrol most fire susceptible localities. Another fire controlling method is by tracing the boundary lines to the width of 5.2 meters and the center belt is burned after scrapping the two sides to a width of 1.2 meters. This work is taken up by mid December and completed by mid January. Fire mazdoors are engaged to clear the fire traced lines from accumulating debris and as a watch during the fire season.

### **3.5 VISITOR MANAGEMENT, EDUCATION, INTERPRETATION PROGRAMMES**

Shendurney Wildlife Sanctuary noted for its rich variety of flora and fauna attracts large number of visitors to the sanctuary which includes students, researchers, scientists, nature lovers, forestry clubs, environmentalists etc whose number has considerably increased after the establishment of Thenmala Eco-tourism Project. The facilities provided by Forest Department to the visitors are boating, medicinal garden, visiting deer rehabilitation centre and information centre. The information centre serves to communicate with the visitors and is situated near the Eco-tourism building. The information centre is for imparting nature education, conducting nature awareness programmes and communicating the values and objectives of the sanctuary. The Wildlife Assistant shall take classes and coordinate the nature camps. The information centre is equipped with one video cassette player, LCD projector etc for showing nature education and wildlife films. Nature camps are offered to various target groups especially for educational institutions while paid nature camp facility is offered to individual groups. Most of the camps are held for school, college, NGO's and the nature clubs which are

affiliated to Forest Department. The nature camps are spread over 2-3 days and involves field visit, nature education classes, nature quiz, etc. Camps are conducted by Department officials though resource persons are invited occasionally.

Brochures and pamphlets detailing the basic information on location, approachability, flora and fauna, their importance and distribution are extended to the visitors for disseminating information. However, it suffers from several deficiencies to effectively achieve its goals, important ones being absence of adequate literature, wildlife films, photographs, exhibits and displays, interpretation models, supporting staff etc. An inspection bungalow with 3 rooms, a dormitory accommodating 40 persons is available at the sanctuary headquarters. A nature study centre at Kattilapara is nearing completion.

**TABLE 8: DETAILS OF NATURE CAMPS CONDUCTED DURING  
LAST 5 YEARS**

<b>Sl.no</b>	<b>Target Groups</b>	<b>2007- 2008</b>	<b>2008- 2009</b>	<b>2009- 2010</b>	<b>2010- 2011</b>	<b>2011- 2012</b>
1	School Students	47	32	34	39	45
2	College Students	16	6	9	9	12
3	Nature clubs/Forestry clubs	1	7	1	1	1
4	Department Staff	-	2	2	-	1
5	NGO'S	3	-	3	3	1
	<b>TOTAL</b>	<b>67</b>	<b>47</b>	<b>49</b>	<b>52</b>	<b>60</b>

### **3.6 WILDLIFE RESEARCH & MONITORING PROGRAMMES**

Research in Protected Areas involves systematic, controlled empirical and critical investigation of hypothetical prepositions about the presumed relations among natural phenomena. It involves any organized enquirey designed and carried out to provide information for solving problems related to PA management. The need of research on PA's is inevitable. The Institutions like BNHS, SACON, TBGRI, KFRI, colleges and universities in addition to NGO's are working in the field of conservation and carrying out several research activities. No institutional arrangements have been established under

Forest Department to carry out research programmes with specialists. The biodiversity cell takes the only initiative in research and development programmes under Forest Department. There is a need for maintaining a close rapport with these scientific organizations for carrying out research activities on a regular basis for the better and effective management of PA landscapes. Research activities conducted in the Sanctuary are few. Wildlife Census was organized by the Forest Department in 2002 and 2011. The 2011 census was conducted by the Forest Department in association with KFRI and Periyar foundation, the results of which are yet to be received.

### **3.7 ADMINISTRATIVE SET UP, STAFF CAPABILITIES & TRAINING PROGRAMMES**

The Sanctuary is under the administrative control of Shendurney Wildlife Division with Wildlife Warden as head of the Division. The Assistant Wildlife Warden administrates the day to day work of the sanctuary with the office located at Thenmala. The sanctuary is divided into three Sections namely Eetapadappu, Kalamkunnu, and Kalluvarambu and each Section is under the direct charge of a Forester. Forest Guards are responsible for the protection and other work in the beats. In addition to the protective staff, fringe area forest dependent people are employed on daily wages for protection works inside the sanctuary. Considering the area of the sanctuary and its management problems, the present strength of protective staff is inadequate. **Considering the extent of the area, the present plan proposes to upgrade the two Forest Sections into two Forest Stations, the one being Kallar Forest Station comprising the whole of Kalluvarambu Section(90sq.km) and Rosemala Forest Station comprising whole areas of Eettappadappu Section and Kalamkunnu Section(81sq.km) which is very much essential for the effective protection and management of the sanctuary. 2 Deputy Rangers, 1 Forester, 8 Forest Guards and 2 Drivers are additionally required. The plan aims to purchase 3 new jeeps, 2 boats, and 2 bikes for improving the communication and protection activities once the Forest Stations start functioning.** The department has provided all the field staff with a postpaid sim card, which enables them to make free unlimited calls within the department.

**TABLE 9: DETAILS OF DEPARTMENT TELEPHONE NUMBERS**

<b>Sl.no</b>	<b>Officials</b>	<b>Number</b>
1	Wildlife Warden (Office)	0475-2344600
2	Wildlife Warden (Mobile)	9447979081
3	Assistant Wildlife Warden (Office)	0475-2344300
4	Assistant Wildlife Warden (Mobile)	8547602930
5	Forester, Ecotourism	8547602931
6	Section Forester, Kalamkunnu	8547602932
7	Section Forester, Kalluvarambu	8547602935
8	Section Forester, Eetapadappu	8547602938
9	Forester, Headquarters	8547602941
10	Forest Guard, Kalamkunnu	8547602933
11	Forest Guard, Kalamkunnu	8547602934
12	Forest Guard, Kalluvarambu	8547602936
13	Forest Guard, Kalluvarambu	8547602937
14	Forest Guard, Kalluvarambu	8547602943
15	Forest Guard, Eetapadappu	8547602939
16	Forest Guard, Eetapadappu	8547602940
17	Forest Guard, Eetapadappu	8547602944

Contact addresses:

Wildlife Warden,  
Shendurney Wildlife Division,  
Thenmala Dam P.O, Kollam  
691301, Kerala  
PH: 0475-2344600  
Email:ww-shendurney@forest.kerala.gov.in

Assistant Wildlife Warden,  
Shendurney Wildlife Sanctuary,  
Thenmala Dam P.O, 691301,  
Kollam, Kerala,  
PH: 0475-2344300

**TABLE 10:PRESENT STAFF POSITION IN WILDLIFE WARDEN'S OFFICE**

<b>Sl.no</b>	<b>Staff</b>	<b>Present Strength</b>
1	Wildlife Warden	1

2	Junior Superintendent	Nil
3	Head Accountant	1
4	U.D.Clerk	Nil
5	L.D.Clerk	3
6	Typist	Nil
7	Peon	2
8	Driver	Nil
9	Part time sweeper	1
10	Attender	Nil

**TABLE 11:PRESENT STAFF POSITION IN ASSISTANT WILDLIFE WARDEN'S OFFICE**

<b>Sl.no</b>	<b>Staff</b>	<b>Present Strength</b>
1	Asst.Wildlife Warden	1
2	Wildlife Assistant	Nil
3	Deputy Ranger	Nil
4	Forester	5
5	Forest Guard	8
6	Reserve Watcher	3
7	U.D.Clerk	1
8	L.D.Clerk	Nil
9	Typist	Nil
10	Jeep Driver	1
11	Peon	1
12	Part time sweeper	Nil
13	Boat Driver	Nil
14	Watcher cum cook(IB)	Nil

### **3.7.1 Training**

The present staff has not undergone any form of training in wildlife management, use of advanced field equipments like camera trap, GPS, range finder, night vision equipments etc. The present number of binoculars, GPS, camera trap etc are inadequate and if the

same is provided to all field staff, it will be beneficial to maintain regular updation of field data with proper documentation. The lack of trained staff seriously affects the Sanctuary management programmes.

### **3.8 INFRASTRUCTURE**

#### **3.8.1 Buildings**

**TABLE 12: DETAILS OF EXISTING BUILDINGS**

<b>Sl.no</b>	<b>Buildings</b>	<b>No.</b>	<b>GPS Readings</b>
1	Kattilappara Picket Station	1	N 8 <sup>0</sup> 52' 18.5" E 77 <sup>0</sup> 7' 5.6"
2	Kallar Guard Station	1	N 8 <sup>0</sup> 52' 6.5" E 77 <sup>0</sup> 9' 2.5"
3	Kallar Picket Station	1	N 8 <sup>0</sup> 52' 57" E 77 <sup>0</sup> 9' 2.5"
4	Kattilapara Nature Study Centre	1	N 8 <sup>0</sup> 55' 10.1" E 77 <sup>0</sup> 5' 50.7"
5	Kalamkunnu Boat Yard	1	N 8 <sup>0</sup> 56' 49.4" E 77 <sup>0</sup> 4' 31.3"
6	Rosemala Guard Station	1	N 8 <sup>0</sup> 54' 52.4" E 77 <sup>0</sup> 11' 15.3"
7	Pallivasal Quarters	1	N 8 <sup>0</sup> 54' 44.1" E 77 <sup>0</sup> 10' 59.4"
8	Rosemala Tower	1	N 8 <sup>0</sup> 54' 47.4" E 77 <sup>0</sup> 10' 15.8"
9	Assistant Wildlife Warden Office	1	N 8 <sup>0</sup> 57' 33.8" E 77 <sup>0</sup> 3' 41.6"
10	Wildlife Warden Office	1	N 8 <sup>0</sup> 57' 32.9" E 77 <sup>0</sup> 3' 42.1"
11	Wildlife Warden Quarters	1	N 8 <sup>0</sup> 57' 35.1" E 77 <sup>0</sup> 3' 42.4"
12	Assistant Wildlife Warden Quarters	1	N 8 <sup>0</sup> 57' 34.5" E 77 <sup>0</sup> 3' 41.3"
13	Staff Quarters I	1	N 8 <sup>0</sup> 57' 34.1" E 77 <sup>0</sup> 3' 39.9"
14	Staff Quarters II	1	N 8 <sup>0</sup> 57' 34.7" E 77 <sup>0</sup> 3' 39.5"
15	Staff Quarters III	1	N 8 <sup>0</sup> 57' 35.2" E 77 <sup>0</sup> 3' 39.1"
16	Staff Quarters IV	1	N 8 <sup>0</sup> 57' 35.8" E 77 <sup>0</sup> 3' 38.8"
17	Staff Quarters V	1	N 8 <sup>0</sup> 57' 35.7" E 77 <sup>0</sup> 3' 39.4"
18	Staff Quarters VI	1	N 8 <sup>0</sup> 57' 35.4"

			E 77 <sup>0</sup> 3' 39.7"
19	Idimuzhangampara Camp Shed	1	N 8 <sup>0</sup> 55' 53.3" E 77 <sup>0</sup> 7' 39.6"
20	Rockwood Camp Shed	1	N 8 <sup>0</sup> 52' 16.1" E 77 <sup>0</sup> 7' 14.4"
21	Pandimotta Camp Shed	1	N 8 <sup>0</sup> 49' 38.4" E 77 <sup>0</sup> 13' 17.6"
22	Umayar Camp Shed	1	N 8 <sup>0</sup> 52' 31.3" E 77 <sup>0</sup> 11' 33.2"
23	Dharbhakulam Camp Shed	1	N 8 <sup>0</sup> 54' 39.3" E 77 <sup>0</sup> 12' 10.6"
24	Pattakulam Camp Shed	1	N 8 <sup>0</sup> 52' 53.9" E 77 <sup>0</sup> 12' 33.5"

### 3.8.2 Roads

**TABLE 13: DETAILS OF EXISTING ROADS**

Sl.no	Roads	Distance(Km)	GPS Readings
1	Thenginthoppu-Pandimotta	11	N 8 <sup>0</sup> 51' 54.2" E 77 <sup>0</sup> 10' 43.8" – N 8 <sup>0</sup> 49' 33.8" E 77 <sup>0</sup> 12' 58.2"
2	Kurumthottivalavu-Rockwood	16	N 8 <sup>0</sup> 54' 15.5" E 77 <sup>0</sup> 7' 46.7" – N 8 <sup>0</sup> 52' 4.9" E 77 <sup>0</sup> 7' 2.3"
3	Kattilappara-Thengumthoppu (metalled Road)	13	N 8 <sup>0</sup> 55' 9.1" E 77 <sup>0</sup> 5' 47.3" – N 8 <sup>0</sup> 51' 54.2" E 77 <sup>0</sup> 10' 43.8"
4	Karadippara-Umayar	14	N 8 <sup>0</sup> 54' 5.0" E 77 <sup>0</sup> 8' 9.3" – N 8 <sup>0</sup> 53' 15.3" E 77 <sup>0</sup> 9' 47.4"
6	Vilakkumaram-Choodal	12	08 <sup>0</sup> 53'43.1"N 077 <sup>0</sup> 06'49.3"E- 08 <sup>0</sup> 54'30.2"N 077 <sup>0</sup> 05'14.7"E
	<b>TOTAL</b>	<b>66</b>	

### 3.8.3 Trek Paths

Apart from roads several **trek paths** are maintained which are used by the staff for regular perambulation and protection which connects almost all parts of the sanctuary in a network. List of the same is given below.

**TABLE 14: DETAILS OF EXISTING TREK PATHS**

Sl.no	Trek Paths	Section	Distance (Km)	GPS Readings
1	Mannanthara-Idimuzhanganpara	Kalamkunnu	8	08°57'37.2"N 077°04'52.8"E - 08°55'27.9"N 077°08'01.3"E
2	Kampakakkadu-H.M.S	Kalamkunnu	4	08°57'18.8"N 077°05'40.4"E - 08°56'26.5"N 077°06'69.2"E
3	Idimuzhanganpara-Aranthachal	Kalamkunnu	3	08°55'27.9"N 077°08'01.3"E- 08°55'89.7"N 077°08'51.8"E
4	7th Block-Thavalappara	Kalamkunnu	4	08°56'27.5"N 077°06'46.1"E- 08°56'66.9"N 077°05'71.9"E
5	Koppam-Marottichal	Kalamkunnu	4	08°55'98.6"N 077°07'59.7"E- 08°55'90.5"N 077°07'89.3"E
6	Idimuzhanganpara-Bedfordmethu	Kalamkunnu	3	08°55'98.6"N 077°07'59.7"E- 08°56'78.3"N 077°07'95.6"E
7	Koppam-Cement Theri	Kalamkunnu	3	08°55'98.6"N 077°07'59.7"E- 08°56'20.8"N 077°07'58.0"E
8	Koppam-Erumchal	Kalamkunnu	3	08°55'98.6"N 077°07'59.7"E- 08°56'34.1"N 077°06'69.0"E
9	Mannanthara-M.S.L.Anavirattichal	Kalamkunnu	2.5	08°57'37.2"N 077°04'52.8"E- 08°57'36.7"N

				077°05'73.3"E
10	Rosemala-Dharbhakulam	Eetapadappu	2.5	08°54'49.7"N 077°10'54.1"E- 08°54'44.3"N 077°12'12.5"E
11	Pattakulam-Eerattumukku (UpperPattakulam	Eetapadappu	3	08°52'05.9"N 077°12'32.7"E – 08°52'53.9"N 077°12'33.5"E
12	Pallivasal-Umayar	Eetapadappu	5	08°54'03.6"N 077°10'47.7"E – 08°52'53.9"N 077°12'33.5"E
13	Rosemala-Samaramukku	Eetapadappu	2.5	08°55'16.6"N 077°10'10.9"E – 08°54'55.3"N 077°09'30.1"E
14	Umayar-Pattakulam	Eetapadappu	7	08°52'37.1"N 077°11'34.7"E- 08°52'05.9"N 077°12'31.9"E
15	Dharbhakulam- Soochimala	Eetapadappu	5	08°54'49.7"N 077°12'13.4"E- 08°53'59.1"N 077°12'49.0"E
16	Rosemala-Pallivasal	Eetapadappu	2.5	08°54'45.5"N 077°10'54.0"E- 08°53'54.2"N 077°10'42.7"E
17	Moonnumukku- Mullanchal	Eetapadappu	5	08°55'10.3"N 077°09'0.06"E- 08°55'22.7"N 077°08'19.1"E
18	Pallivasal- Idimuzhanganpara	Eetapadappu	6	08°54'08.4"N 077°06'25.7"E- 08°55'39.4"N 077°08'25.7"E
19	Soochimala-Stephanaradi	Eetapadappu	4	08°53'58.7"N 077°12'21.8"E- 08°52'11.0"N 077°12'21.9"E
19	Pandimotta-Thalaimala	Kalluvarambu	4	08°49'73.9"N 077°12'67.9"E- 08°49'67.0"N 077°13'26.0"E

20	Pandimotta-Pathinachu	Kalluvarambu	7	08 <sup>o</sup> 49'61.6"N 077 <sup>o</sup> 13'03.6"E- 08 <sup>o</sup> 51'67.0"N 077 <sup>o</sup> 13'26.0"E
21	Pathinachu-Umayar	Kalluvarambu	9	08 <sup>o</sup> 50'70.4"N 077 <sup>o</sup> 13'82.4"E – 08 <sup>o</sup> 52'71.9"N 077 <sup>o</sup> 10'74.6"E
22	Kochupara trekpath	Kalluvarambu	4	08 <sup>o</sup> 53'13.1"N 077 <sup>o</sup> 07'18.7"E- 08 <sup>o</sup> 52'04.9"N 077 <sup>o</sup> 07'02.3"E
23	Choodal-Kattilapara	Kalluvarambu	3	08 <sup>o</sup> 54'30.2"N 077 <sup>o</sup> 05'14.7"E- 08 <sup>o</sup> 54'04.1"N 077 <sup>o</sup> 06'20.2"E
24	Ettakannam-Marappalam	Kalluvarambu	6	N 8 <sup>o</sup> 53'48.1" E 77 <sup>o</sup> 8' 23.1" – N 8 <sup>o</sup> 53'42" E 77 <sup>o</sup> 8' 27.4"
24	Kurumthottivalavu- Vilakkumaram	Kalluvarambu	3	08 <sup>o</sup> 54'15.5"N 077 <sup>o</sup> 07'46.7"E- 08 <sup>o</sup> 53'43.1"N 077 <sup>o</sup> 06'49.3"E
25	Karadipara-Kulumbi	Kalluvarambu	4	08 <sup>o</sup> 54'05.0"N 077 <sup>o</sup> 08'9.3"E- 08 <sup>o</sup> 54'09.2"N 077 <sup>o</sup> 05'13.7"E
	<b>TOTAL</b>		<b>118</b>	

### **3.9 LEASES&CONCESSIONS IN THE SANCTUARY&THEIR MANAGEMENT**

There are no leases and concession in the Sanctuary

### **3.10 SUMMARY OF THREATS TO PA**

The common management problems presently encountered by the PA are the following.

- **Fire**
- **Exotic and Invasive weeds**
- **Poaching & Fishing in the reservoir**
- **Presence of Private Estates**
- **Illegal felling of trees & small timber**

However despite these odd factors, the Sanctuary still harbors a great diversity of flora and fauna. In addition to its inherent ecological value, the PA is valued for its tourism attraction and livelihood needs. This creates significant challenges to the PA managers for managing the impacts of these diverse interests according to expectations of various stakeholders.

**(i) Fire:** Fire is one of the serious problems faced by the sanctuary especially during the dry season. Poachers, smugglers, people living in the estates and fringes are mainly responsible for fire in the sanctuary. Fire in these habitats would lead to destruction of these fragile habitats and may lead to the extinction of several species of plants, animals, insects and microorganisms. In order to protect the habitat from fire, protection activities such as integration of fire protection with eco-development activity may be explored. In addition, schemes may be developed for reward and incentive package in conjunction with schemes. Formation of participatory fire management committees and regular maintenance of fire lines will also help in preventing extensive fire in the PA.

**TABLE 15: DETAILS OF EXISTING FIRE LINES**

<b>Sl.no</b>	<b>Fire Lines</b>	<b>Section</b>	<b>Distance (Km)</b>	<b>GPS Readings</b>
1	Mannanthara- Idimuzhanganpara	Kalamkunnu	8	08°57'37.2"N 077°04'52.8"E- 08°55'27.9"N 077°08'01.3"E
2	Kampakakkadu- H.M.S	Kalamkunnu	4	08°57'18.8"N 077°05'40.4"E- 08°56'26.5"N 077°06'69.2"E
3	Vattakkana- Onnamkunnu	Kalamkunnu	3.5	08°56'39.5"N 077°07'96.8"E- 08°55'99.9"N 077°08'48.9"E
4	Karimarachuvadu- Edappalayam	Kalamkunnu	3	08°56'00.2"N 077°07'31.6"E- 08°56'39.4"N 077°08'08.4"E
5	Kuthirappara- Cheenimukku	Kalamkunnu	2	08°57'29.9"N 077°04'95.7"E- 08°57'25.0"N 077°05'32.6"E
6	Edappalayam methu- Palaruvimottai	Kalamkunnu	7	08°56'52.6"N 077°07'16.4"E-

				08°55'59.9"N 077°10'05.4"E
7	Kazhuthurutty- Edappalayam	Kalamkunnu	8	08°58'05.5"N 077°05'59.4"E- 08°56'50.2"N 077°07'28.4"E
8	Moonumukku- Kazhuthurutty	Kalamkunnu	3	08°56'43.7"N 077°06'16.6"E- 08°58'05.5"N 077°05'59.4"E
9	Anjilimukku- Varattuchal	Kalamkunnu	3	08°55'43.8"N 077°05'53.3"E- 08°55'72.7"N 077°08'22.9"E
10	Idimuzhanganpara- Aranthachal	Kalamkunnu	3	08°55'27.9"N 077°08'01.3"E- 08°55'89.7"N 077°08'51.8"E
11	7th Block- Thavalappara	Kalamkunnu	4	08°56'27.5"N 077°06'46.1"E- 08°56'66.9"N 077°05'71.9"E
12	Mulamkuttom- Thekkummoodu	Kalamkunnu	2	08°55'48.9"N 077°08'09.0"E- 08°56'12.8"N 077°08'07.5"E
13	Ottachal-Plankootam	Kalamkunnu	3.5	08°56'33.0"N 077°07'73.3"E- 08°56'49.4"N 077°07'66.0"E
14	Kuthiralayam- Moonnumukku	Kalamkunnu	3	08°56'80.8"N 077°05'94.5"E- 08°57'05.4"N 077°06'11.8"E
15	Kuthiralayam- Erumchal	Kalamkunnu	2	08°56'80.8"N 077°05'94.5"E- 08°56'34.1"N 077°06'69.0"E
16	Choorachal- 13Kannara	Kalamkunnu	3	08°57'36.7"N 077°07'73.3"E- 08°57'65.7"N 077°06'20.2"E
17	Fruit bearing plantation 2004 (Zero point)	Kalamkunnu	3	08°55'85.5"N 077°07'14.6"E
18	Medicinal plantation 2006 (Zero	Kalamkunnu	3	08°56'24.3"N 077°06'52.5"E

	point)			
19	Habitat improvement, Idimuzhanganpara 2007 (Zero point)	Kalamkunnu	3	08°55'98.6"N 077°07'59.7"E
20	Moonumukku-Idimuzhanganpara (Padapanpara)	Eetapadappu	4	08°55'17.5"N 077°10'07.9"E - 08°55'26.7"N 077°08'44.1"E
21	Vilakkumaram-Idimuzhanganpara	Eetapadappu	5	08°55'52.8"N 077°10'23.0"E - 08°55'34.5"N 077°09'11.1"E
22	Rosemala-Vilakkumaram	Eetapadappu	1	08°55'36.7"N 077°10'33.7"E- 08°55'54.8"N 077°10'24.2"E
23	Rosemala enclosure boundary	Eetapadappu	7.5	08°55'28.6"N 077°10'39.8"E - 08°55'28.6"N 077°10'39.8"E
24	Palaruvi-Pulmethu	Eetapadappu	6	08°56'21.1"N 077°10'07.5"E- 08°54'58.5"N 077°11'47.8"E
25	Postland-State boundary	Eetapadappu	3	08°53'08.1"N 077°13'11.3"E- 08°53'48.2"N 077°13'24.6"E
26	Anachantha-Stephanaradi	Eetapadappu	3	08°52'59.3"N 077°11'25.2"E - 08°52'11.1"N 077°12'24.2"E
27	Soochimala-Stephanadi	Eetapadappu	4	08°53'58.7"N 077°12'49.8"E - 08°52'11.0"N 077°12'21.9"E
28	Rosemala-Pallivasal	Eetapadappu	2.5	08°54'45.5"N 077°10'54.0"E- 08°53'54.2"N 077°10'42.7"E
29	Pallivasal-Idimuzhanganpara	Eetapadappu	6	08°54'08.4"N 077°06'25.7"E- 08°55'39.4"N 077°08'25.7"E
30	Rosemala-Kanjirathumoodu	Eetapadappu	2.5	08°54'06.9"N 077°10'28.0"E - 08°54'52.0"N

				077°10'14.9"E
31	Elavummoodu-Palaruvikunnu	Eetapadappu	4	08°55'29.2"N 077°10'13.1"E - 08°56'01.7"N 077°09'28.5"E
32	Rosemala-Dharbhakulam	Eetapadappu	2.5	08°54'49.7"N 077°10'54.1"E- 08°54'44.3"N 077°12'13.1"E
33	Dharbhakulam-Pongummotta	Eetapadappu	5	08°55'03.1"N 077°12'0.39"E - 08°53'58.6"N 077°12'49.3"E
34	Postland-State boundary	Eetapadappu	3	08°53'08.1"N 077°13'11.3"E- 08°53'48.2"N 077°13'24.6"E
35	Stephanaradi-Postland	Eetapadappu	3.5	08°51'59.2"N 077°12'27.8"E- 08°53'11.7"N 077°13'11.5"E
36	Pattakkulam-Eerattummukku	Eetapadappu	5	08°52'05.9"N 077°12'32.7"E- 08°52'53.9"N 077°12'33.5"E
37	Vilakkumaram-Dharbhakulam	Eetapadappu	3	08°55'54.8"N 077°10'24.2"E - 08°54'58.5"N 077°11'47.8"E
38	LTM-Moonnumukku	Eetapadappu	5	08°55'58.5"N 077°09'24.2"E - 08°55'17.5"N 077°10'07.9"E
39	State boundary	Eetapadappu	14	
40	Chenkurinji plot, Rockwood	Kalluvarambu	10	08°52'12.7"N 077°07'08.3"E- 08°52'16.1"N 077°07'14.4"E
41	Vilackumaram-Onnamjanda	Kalluvarambu	6	08°53'55.2"N 077°07'09.0"E- 08°53'97.0"N 077°06'22.8"E
42	Kumbalangapara-68th kuzhi	Kalluvarambu	4	08°53'09.4"N 077°07'31.8"E- 08°53'05.6"N

				077°07'37.6"E
43	Marappalam-Kumbalangapara	Kalluvarambu	6	08°53'42.0"N 077°08'36.8"E- 08°53'09.4"N 077°07'20.7"E
44	LTM fireline	Kalluvarambu	10	08°53'43.1"N 077°06'49.3"E- 08°53'44.6"N 077°07'14.0"E
45	Choodal-Vilackumaram	Kalluvarambu	8	08°54'42.3"N 077°05'10.4"E- 08°53'49.2"N 077°06'45.7"E
46	Choodal-Kattilappara	Kalluvarambu	12	08°54'30.2"N 077°05'14.7"E- 08°54'04.1"N 077°06'20.2"E
47	Choodal-Rockwood	Kalluvarambu	10	08°54'42.3"N 077°06'36.4"E- 08°52'35.8"N 077°06'02.4"E
48	Kattilappara-Kallar	Kalluvarambu	14	08°55'01.4"N 077°05'50.1"E- 08°53'10.1"N 077°08'24.1"E
49	Chintharmoni fireline	Kalluvarambu	10	08°52'41.9"N 077°07'21.4"E- 08°51'35.9"N 077°10'77.3"E
	<b>TOTAL</b>		<b>227</b>	

(ii) **Exotic and invasive weeds:** Exotic weeds such as *Lantana camara*, *Mimosa invisa*, *Mikania macrantha* are found infested in several parts of the sanctuary. These weeds are known for their vigorous and rampant growth and once established spreads at an alarming rate. It damages the natural species by depriving them of sunlight, water, nutrients, damages seedlings and their regeneration and releases certain substances that inhibit the growth of other plants. Weed eradication is attempted in many areas but the results are not found to be satisfactory and effective. It can be reduced or eradicated through creating shade which is not suitable for these weed species. It is important to control or destroy in the very beginning before dispersal of seeds. It is suggested that it

would be better to uproot or destroy when it is seen in small area. Uprooting before flowering and burning would be the best option to control from wider spreading.

**(iii) Poaching & Fishing in the reservoir:** One of the major threats the sanctuary is facing is the organized poaching gangs entering the sanctuary from the Tamilnadu side and their illicit activities. In order to overcome this, a Guard station has to be established at Dharbhakulam and Pandimotta. Infrastructural facilities in the camp sheds should be improved with facilities like bathrooms and toilets, wireless sets, GPS etc. Fishing, is done in a small scale in the reservoir by local people. This need to be stopped. Frequency of patrolling and overnight camping in vulnerable areas has to be done on a much regular basis. Along with strict enforcement of law, awareness may be created among the local communities.

**(iv) Presence of Private Estates and Enclosures:** There are 2 private estates namely Rockwood and Kallar(which include Thengumthoppu estate also) and 1 enclosure namely Rosemala inside the sanctuary and there is a need to overlook their activities and impact of on the sanctuary very carefully and effectively. The presence of the estates and the disturbances associated with it is hindering the effective protection of the sanctuary. The only long term solution is to take over the estates and add it to the part of sanctuary, for which serious intervention from the part of Government is needed. The relocation of the people from these estates can be worked out on the basis of the pattern adopted in Wayanad.

**(v) Illegal felling of trees & small timber:** Cases of illicit felling of trees and small timber are reported now and then, however a steady decrease in these incidents are seen over the years. Inaccessibility and lack of infrastructural facilities at strategic places is hindering the patrolling activities. Collection of firewood and other NWFP's occur in small degree across the sanctuary.

## **CHAPTER 4**

### **PEOPLE-PA INTERFACE SITUATION**

#### **4.1 VILLAGES/SETTLEMENTS INSIDE & ON THE FRINGE OF THE PA & THEIR SOCIO-ECONOMIC & PA DEPENDENCY PROFILE**

There are 3 private estates namely Rosemala, Kallar and part of Rockwood estate, situated well inside the sanctuary. These private enclosures of about 877ha in extent are within the notified sanctuary boundary. An extent of 450ha of vested forests is also there in the Sanctuary. The total peripheral length is about 35 km and almost all areas have already been demarcated by erecting cairns. The Kattilappara area was also taken into account because of local people dependency on forest areas for their daily sustenance. Majority of residents of Rosemala settlement is using firewood for cooking purposes. Alternative fuels like kerosene stove and biogas are also used by the people. Biogas use is only among people having cattle and is few in number. Reservoir area of Shendurney wildlife sanctuary is the water source for majority settlements in and around sanctuary area. The people of Rosemala private enclosure are engaged in collection of non-wood forest products. The NWFP thus collected is used for self-use and for sales. Major items collected were Kunthirikkam, Pathirippoovu, Cheevakkai, Pachotti, Incha, Koppumvala, Cardamom, Ponnampoo, Tharavella, Parandakkai, Cheenickai, Maramanjil, Chithirappoovu, Marottikkuru, Vayanappoovu, Kudampuli etc. The details of private estates within and outside the sanctuary are shown below.

**TABLE 16: DETAILS OF PRIVATE ESTATES & ENCLOSURES WITHIN  
SANCTUARY LIMITS**

<b>Sl. no</b>	<b>Estate/Enclosure</b>	<b>Extent (Ha)</b>	<b>No. of Families</b>	<b>Male</b>	<b>Female</b>
1	Rosemala Enclosure	262	225	543	723
2	Kallar Estate (which include Thengumthoppu estate also)	552	22	24	9
3	Rockwood Estate	63	2	4	2

**TABLE 17:DETAILS OF PRIVATE ENCLOSURES OUTSIDE  
SANCTUARY LIMITS**

<b>Sl.no</b>	<b>Enclosure</b>	<b>Extent</b>	<b>No. of Families</b>	<b>Male</b>	<b>Female</b>
1	Kattilappara	25ha	37	48	51

#### **4.2 PEOPLE-PA MUTUAL IMPACT ASSESSMENT**

The sanctuary has a dominant influence up on the people who are living in the private enclosures of the sanctuary. On the other hand the people living in enclosures also exert direct influence on the forest resources. Majority of the people residing in the settlements inside and on the fringes of PA are depending the forests highly for their livelihood. There are three private enclosures within the area namely Rosemala, Rockwood and Kallar estates. Shendurney Wildlife Sanctuary is home to a variety of wildlife including birds. The activities of the people in the enclosures is a hindrance to the wildlife of the sanctuary. Uncontrolled human interaction, excessive sound pollution, contamination of boat oil within the reservoir, hunting etc have a direct impact on the bird population of the sanctuary. It was reported by the scientists that excessive boat sounds have direct negative impact on breeding of birds. People are fishing not only for domestic use but also for selling. Illegal collection of NWFP is another practice in which people are usually engaged. People are collecting various NWFP's like Kunthirikkam, Cardamom, Incha, Cheevackai, Maramanjai, Vayampoo, Tharavella, Pachootti etc. Illegal collection of NWFP 's is one of the major problems faced by the Forest Department in Protected

Area management. Public visit to Pallivasal is one of the major problems faced by the Forest Department in the sanctuary management. Every year thousands of people are visiting this place for offering religious customary practices. The numbers of visitors are increasing every year without having any control. Since the area is within the sanctuary people have to travel deep inside forest to reach the holy place. People are leaving lot of spoilage including containers, plastic bottles, carry bags, etc. along the roads during the travel. This is causing severe damage to the biodiversity and rich wildlife of the sanctuary. The major role of the EDC's comes during the fire season while forming the PFM committees. Fire protection activities including tracing of fire lines are being done through the committees formed from EDC's.

#### **4.3 EVALUATION OF PAST&CURRENT DEVELOPMENTAL PROGRAMMES FOR PEOPLE'S WELFARE**

The Ecodevelopment activities taken up by Forest Department have created commendable impact on the people. Providing basic amenities, energy alternatives, drinking water facilities, giving training in handicraft making and giving assistance for income generation are some of the activities taken up. These Eco-development activities had helped in creating awareness among the inhabitants and there by strengthened the relation between the people and PA managers. In continuation with the past activities initiated by Forest Department, many more were carried out during the present plan. Seedlings of economically important species were supplied to the EDC members, Medical camps were organized for EDC members and local people, Nature camps and awareness creation programmes were carried out, Agricultural implements were supplied through EDC members, several initiatives were taken for the education of children, various forestry works were carried out during the plan period and gas connection and solar lamps were provided to certain families and training in handicraft making was also conducted for interested EDC members.

**TABLE 18:ENTRY POINT ACTIVITIES BY EDC's (2006-2012)**

<b>Sl.no</b>	<b>Name of EDC</b>	<b>Activities Done</b>	<b>Total Amount</b>
1	Kattilappara	Purchase of chicks, Gas connection	1,31,865
2	Neduvanoorkadavu		48018

3	Thenmala Dam	Office, Medical assistance, Education materials	48,000
4	Parappar	Office, Medical assistance, Education materials	46,800
5	Thenmala MSL		47710
6	Elavumoodu	Maintenance of road, Solar fencing, Study centre, Office building	96000
7	Easamukku	Maintenance of road, Solar fencing, Study centre, Purchase of sewing machine	96000
8	Nellikunnu	Maintenance of road, Solar fencing, Study centre, Office building, Purchase of jeep	271000
9	Ambalamukku	Maintenance of road, Solar fencing, Purchase of sewing machines	96000

#### **4.4 PAST ECO DEVELOPEMNT INITIATIVES & THEIR IMPACT**

There are a total of 9 EDC's and 1 SET EDC functioning in the sanctuary. The Shendurney Ecotourism Development Committee (SET) EDC comprises of 18 members taken from the other 9 EDC's is assisting in conducting the Ecotourism packages in the Sanctuary. 18 members are actively participating in the conduct of the said Ecotourism packages which includes boating in the Reservoir, visit to Deer Rehabilitation Centre etc. The 9 EDC's are (**Kattilappara, Neduvanoorkadavu, Thenmala Dam, Parappar, Thenmala MSL, Elavumoodu, Easamukku, Nellikunnu** and **Ambalamukku**). The Ecodevelopment surcharge levied from the Tourists go to the welfare fund of EDC

members under FDA. Daily wage protection mazdoors are also selected from EDC members and are engaged in the Protection activities at various locations inside the Sanctuary.

**TABLE 19: DETAILS OF AUGMENTATION ACTIVITIES IN SHENDURNEY BY EDC's**  
**UNDER NAP FROM 2006-2012**

<b>Sl.no</b>	<b>Name of EDC</b>	<b>Planting in Ha</b>
1	Kattilappara	110
2	Neduvanoorkadavu	75
3	Thenmala Dam	50
4	Parappar	58.77
5	Thenmala MSL	36.25
6	Elavumoodu	60
7	Easamukku	60
8	Nellikunnu	95
9	Ambalamukku	65
	<b>TOTAL</b>	<b>610.02</b>

The major field of involvement of the EDC's as far as Shendurney Wildlife Sanctuary is concerned is in (i)**Fire Protection** (ii) **Ecotourism Activities** (iii) **General Protection of the Sanctuary.**

(i) **Fire Protection:** The major role of the EDC's comes during the fire season while forming the PFM committees. Fire protection activities including tracing of fire lines are being done through the committees formed from EDC's. This has also helped them in earning an income for their livelihood. However, merely by being a member in the EDC and fire fighting gangs doesn't fulfill the mutual commitment of EDC members & Forest Department. More efforts like monitoring of fire lines & constant vigil against forest fires and protection activities are expected from the EDC's. For this to be achieved, further awareness programmes and trainings need to be imparted to the EDC's.

(ii) **Ecotourism Activities:** The Shendurney Ecotourism Development Committee (SET) is assisting in conducting the Ecotourism packages in the sanctuary. The income generated from the Tourism activities should be sufficient enough to meet their expenses

and also to meet the food expenses and for the smooth functioning of the Deer Rehabilitation Centre too. 1 new passenger boat is needed for conducting boating, since the available boats are nearing its life period. An Ecotourism plan shall be prepared by the Wildlife Warden and shall regulate these activities effectively without damaging the environment.

(iii) **General Protection of the Sanctuary:** With the Co-operation of the local communities, Protection issues in the sanctuary was reduced to a large extent. However, more active and committed involvement from the local people and EDC members needs to be there.

# CHAPTER 5

## **VISION, OBJECTIVES, ISSUES & PROBLEMS**

### **5.1 THE VISION**

In the Stakeholders' workshop on preparation of Management Plan for Shendurney Wildlife Sanctuary held on 30-5-2011, the vision statement was drafted. It reads as follows: *“To conserve the biological diversity of Shendurney wildlife sanctuary for future generations with the support of local people and also to develop the sanctuary as an ideal habitat for the long term survival of several species of wildlife”*

### **5.2 OBJECTIVES OF MANAGEMENT**

- To protect and conserve the rich biodiversity of the sanctuary and to develop the region as an ideal habitat for the long term survival of several species
- To Restore degraded forest areas and corridors and to prevent fragmentation of the biogeographic landscape
- To facilitate research, monitoring, education and awareness creation for the better management of the sanctuary
- To strengthen People-PA interface through revamping the EDC's and to reduce the people dependency on the sanctuary
- To protect the catchment of Kallada Reservoir
- To manage the grasslands and other degraded forests
- To promote environment conservation awareness and regulate nature based tourism

### **5.3 PROBLEMS IN ACHIEVING OBJECTIVES**

The problems identified in achieving each of the above objectives and the broad strategies suggested in the stakeholders' workshop are as follows:

**TABLE 20: SUMMARY OF STAKEHOLDER'S WORKSHOP**

Sl.no	Constraints	Strategies
<b>1)To protect and conserve the rich biodiversity of the sanctuary and to develop the region as an ideal habitat for the long term survival of several species.</b>		
	1) Inadequate information on rare, endangered, threatened and endemic species	<ul style="list-style-type: none"> <li>▪ Review the available literature and compile information, including population estimation of Key species</li> <li>▪ Identify the gaps in information and collect required data through studies, surveys within a stipulated period</li> <li>▪ Preparing and updating of vegetation map</li> <li>▪ Develop and implement habitat management plan</li> <li>▪ Review the species requirements including waterholes, myristica swamps etc</li> </ul>
	2) Lack of wildlife health monitoring	<ul style="list-style-type: none"> <li>▪ Conduct periodic survey and assessment of animal populations</li> <li>▪ Conduct regular wildlife health monitoring</li> <li>▪ Impart training to field staff, EDC members for conducting wildlife health monitoring</li> </ul>
	3) Lack of mechanism for coordination with scientific institution	<ul style="list-style-type: none"> <li>▪ Develop institutional mechanism(KFRI, TBGRI, CESS,SACON, CWRD,WII, NGO's etc)</li> </ul>
	4) Lack of monitoring mechanism of special habitats and unique species	<ul style="list-style-type: none"> <li>▪ Develop and implement monitoring protocol.</li> <li>▪ Impart training to the staff for implementing monitoring protocol</li> <li>▪ Procure infrastructure(Binocular, digital camera, GPS, compass, range finder, night vision</li> </ul>

		<p>equipments etc)</p> <ul style="list-style-type: none"> <li>▪ Ensure posting of staff with aptitude</li> <li>▪ Create a database at division level, evaluate annually and generate reports</li> </ul>
	5) Exotic and invasive weeds ( <i>Mikania</i> , <i>Lantana camara</i> , <i>Mimosa invisa</i> )	<ul style="list-style-type: none"> <li>▪ Identify and prioritize weed infested area,</li> <li>▪ timely removal through appropriate method (uprootal, cutting, based on participatory site specific plan)</li> <li>▪ Monitor eradicated area</li> </ul>
	6) Fire	<ul style="list-style-type: none"> <li>▪ Prepare and implement fire protection plan</li> <li>▪ Implement participatory fire management</li> <li>▪ Monitor impact of fire</li> </ul>
	7) Illegal guns in the fringe areas	<ul style="list-style-type: none"> <li>▪ Enforce legal provisions with the support of line department</li> <li>▪ Persuade the owners to surrender the weapons with the support of EDC's</li> </ul>
	8) Illegal felling and poaching	<ul style="list-style-type: none"> <li>▪ Prepare and implement the protection plan</li> <li>▪ Provide infrastructure support</li> <li>▪ Camp sheds: Existing facilities need to be improved</li> <li>▪ Proposed camp shed at Thengumthoppu</li> <li>▪ Vehicles: Existing Jeep 2, bike 1</li> <li>▪ Proposed Jeep 4 bike 2</li> <li>▪ Arms: Revolver 2, Rifle 2 Proposed: 4 Rifles</li> <li>▪ Supply of camping gear</li> <li>▪ Roads: Maintain all existing roads.</li> <li>▪ Maintain all trek paths</li> <li>▪ Staff strength. Need additional staff(list attached)</li> </ul>
	9) Firewood collection	<ul style="list-style-type: none"> <li>▪ Evaluate the quantity and impact of fuel wood collection(short term study and monitor through EDC)</li> <li>▪ Explore possibilities of</li> </ul>

		providing LPG connection, biogas, fuel efficient choolahs etc
	10) Grazing(from outside PA and from settlements within)	<ul style="list-style-type: none"> <li>▪ Evaluate the impact</li> <li>▪ Address through EDC inputs</li> </ul>
	11) Accumulation of non degradable pollutants	<ul style="list-style-type: none"> <li>▪ Awareness creation</li> <li>▪ Enforcement of legal provisions</li> </ul>
	12) Inadequate staff strength	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	13) Fishing	<ul style="list-style-type: none"> <li>▪ Enforcement of legal provisions</li> <li>▪ Training to local EDC's for sustainable fishing for self consumption</li> </ul>
<b>2) To Restore degraded forest areas and corridors and to prevent fragmentation of biogeographic landscape</b>		
	1) Private estates and enclosures (Kallar, Rosemala, Kattilapara, Rockwood, Thengumthoppu)	<ul style="list-style-type: none"> <li>▪ Move proposal to government to take over the estates</li> </ul>
	2) Administrative control of strip of plantation under Thenmala Range at Kattilappara adjoining reservoir	<ul style="list-style-type: none"> <li>▪ Adding to sanctuary portion</li> </ul>
	3) Fire	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	4) Cattle Grazing	<ul style="list-style-type: none"> <li>▪ Already Covered</li> </ul>
	5) Illegal Reed Extraction (Dharbhakulam, Kazhuthuruthy )	<ul style="list-style-type: none"> <li>▪ Strengthen patrolling measures</li> <li>▪ Enforce legal provisions</li> </ul>
	6) Plantations along fringes (Thenmala Range)	<ul style="list-style-type: none"> <li>▪ Adding to sanctuary portion</li> </ul>
	7) Invasive Weeds	<ul style="list-style-type: none"> <li>▪ Already Covered</li> </ul>
<b>3) To facilitate research, monitoring, education and awareness creation for the better management of the sanctuary</b>		
	1) Inadequate funds	<ul style="list-style-type: none"> <li>▪ Supply of more funds</li> </ul>
	2) Lack of interaction between researchers and forest officials	<ul style="list-style-type: none"> <li>▪ More open approach</li> </ul>
	3) Inadequate updated equipments and gadgets	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	4) Lack of trained staff	<ul style="list-style-type: none"> <li>▪ Impart training to staff</li> <li>▪ Posting of staff to their aptitude</li> </ul>
	5) Lack of interpretation materials	<ul style="list-style-type: none"> <li>▪ Develop adequate materials</li> </ul>
<b>4) To Manage the Grasslands and other Degraded Forests</b>		
	1) Habitat management to suit the herbivores	<ul style="list-style-type: none"> <li>▪ Controlled burning</li> <li>▪ Identify the areas and practice on a rotation basis</li> </ul>
	2) Fire	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>

	3) Grazing	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	4) Firewood collection	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	5) Weed invasion	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	6) Illicit felling	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	7) Inadequate knowledge on factors affecting the grasslands and degraded forest ecosystem	<ul style="list-style-type: none"> <li>▪ Conduct studies</li> <li>▪ Planting of indigenous and fruit bearing trees/bamboo in degraded areas</li> </ul>
	8) Lack of regeneration	<ul style="list-style-type: none"> <li>▪ Conduct studies</li> <li>▪ Initiate appropriate soil and moisture conservation works</li> </ul>
	9) Lack of monitoring of the system	<ul style="list-style-type: none"> <li>▪ Monitoring the restoration progress</li> <li>▪ Develop participatory monitoring system with EDC's</li> <li>▪ Impart training to staff/EDC's</li> </ul>
<b>5) To Protect the Catchment of Kallada Reservoir</b>		
	1) Soil erosion;	<ul style="list-style-type: none"> <li>▪ Identify and prioritize the problematic areas</li> <li>▪ Plant the areas with reed/bamboo, soil bunds, gully plugging etc</li> <li>▪ Soil moisture conservation measures</li> </ul>
	2) Sand mining	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	3) Accumulation of non degradable pollutants	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	4) Illicit felling	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	5) Lack of regeneration	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	6) Incompatible land use in private land adjoining PA	<ul style="list-style-type: none"> <li>▪ Awareness creation</li> </ul>
<b>6) To Strengthen People-PA interface</b>		
	<p>1) Man wildlife conflict (wild boar, elephant, monkeys, Gaur)</p> <p>Crops - Tapioca, pineapple, coconut, pepper, arecanut, plantain.</p> <p>Domestic animals attacked-goat, poultry, rabbit</p>	<ul style="list-style-type: none"> <li>▪ Erect barriers/trenches/solar power fencing, stone falls, bio fencing (planting agave, caesalpinia, koduveli etc)</li> <li>▪ Maintenance of existing barriers involving EDC's</li> <li>▪ Awareness creation for crop pattern</li> <li>▪ Study the crop pattern, intensity of damage, animals involved etc and evolve strategies for mitigation of problems</li> <li>▪ Timely payment of</li> </ul>

		compensation
	2) Inadequate linkages with line departments	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	3) Delay in payment of compensation	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	4) Lack of alternate livelihood options	<ul style="list-style-type: none"> <li>▪ Address through EDC's</li> </ul>
<b>7) To Promote Environment Conservation awareness and linkages with government agencies to develop nature based tourism</b>		
	1) lack of awareness programmes	<ul style="list-style-type: none"> <li>▪ Develop appropriate programmes for different target groups</li> </ul>
	2)Lack of awareness materials/information brochures	<ul style="list-style-type: none"> <li>▪ Develop materials/brochures/Stickers for information dissemination with professional inputs</li> <li>▪ Create and maintain a website for the sanctuary</li> </ul>
	3) Lack of ecotourism programmes and linkages with DTTC	<ul style="list-style-type: none"> <li>▪ Address the issue through FDA and develop linkages with DTTC</li> </ul>
	4) No visitor management institutions	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>
	5) Inadequate staff strength	<ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>

# CHAPTER 6

## **THE STRATEGIES AND FUTURE MANAGEMENT**

### **(Boundaries, Zonation, Zone plan and Theme Plan)**

The Management Plan proposes for division of the Sanctuary into various zones and prescribes the strategies for each zone under zone plans. Details of activities would be provided under the theme plans.

#### **6.1 BOUNDARIES**

The Wildlife Warden shall ensure and monitor the boundaries of the Sanctuary bordering the private estates and human habitation is clearly demarcated and no encroachments are there. **The plan proposes for relocation of the people from the three estates namely Kallar, Rockwood and Rosemala and take over the estates into the custody of Forest Department. The strategy can be worked out on the basis of the successful pattern adopted at Wayanad.**

#### **6.2 ZONATION**

- Provide a geographical framework to facilitate the management of the Sanctuary
- Indicate which management directions have priority in various part of the Sanctuary
- Assess in minimizing existing and potential conflicts between uses and activities or between these to the protection of the Sanctuary values
- Formulate a developmental proposal assessing the basis for suitable activities

#### **6.3 ZONE PLANS**

The Shendurney Wildlife Sanctuary can be divided into the following Zones namely

- **Protection Zone**
- **Core Zone**

- **Buffer Zone**
- **Ecotourism Zone**

The whole Sanctuary should be brought under the **Protection Zone**. The areas such as Pandimotta, Alwarkurichi, Umayar, Aruliyar, Narathar, Dharbhakulam etc having a total extent of around 75.5sq.km comprises the **Core Zone**. The **Buffer Zone** covers an area of about 47.13sq.km wherein part of the reservoir area is also included. The buffer zone consists of human inhabited areas viz. Rosemala and Kallar estates. The western most portion of the sanctuary beyond buffer zone constitutes the **Ecotourism Zone**. It consists of an area of 48.35sq.km. The entry point to this sanctuary is in this zone. The major portion of the reservoir is falling in this zone.

### **6.3.1 PLAN FOR PROTECTION ZONE**

#### **6.3.1.1 Protection Initiatives**

The Sanctuary is supported with Anti Poaching Camp Sheds at places like Idimuzhangampara, Rockwood, Pandimotta, Umayar, Dharbhakulam and Pattakulam. Protection watchers shall halt permanently in the Camp Sheds. Improvement of these structures and their periodic maintenance should be carried out regularly. Bathroom facilities shall be provided at the earliest and trenches shall be taken around all the Camp Sheds and shall be urgently provided with facilities like solar lamps, torches, leech proof socks, sleeping bags, coats, GPS, etc. A quarters shall be upgraded and shall be provided to the wildlife Assistant. The watch tower at Rosemala shall be improved with better facilities. In addition to this, 1 new Camp Shed is proposed at Thengunthoppu. Further, 2 more camp sheds can be constructed over the plan period according to the needs of the sanctuary, if found necessary. Steps shall be taken to persuade owners to surrender weapons and enforce legal provisions. Patrolling routes have to be regularly maintained for regular patrolling. Regular patrolling can effect in reduction in illicit felling, fire wood collection and sand mining. The Assistant Wildlife Warden should prepare monthly camping schedules for the staff so that the staff also camp in the Anti Poaching Camp Sheds in a rotation basis. All the existing buildings and offices under the wildlife division shall be maintained properly.

**TABLE 21:PROPOSED STAFF POSITION OF WILDLIFE WARDEN’S OFFICE**

<b>Sl.no</b>	<b>Staff</b>	<b>Present Strength</b>	<b>Proposed Strength</b>
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1	Wildlife Warden	1	1
2	Junior Superintendent	Nil	1
3	Head Accountant	1	1
4	U.D.Clerk	Nil	Nil
5	L.D.Clerk	3	3
6	Typist	Nil	Nil
7	Peon	2	2
8	Driver	Nil	-
9	Part time sweeper	1	1
10	Attendar	Nil	1

**TABLE 22:PRESENT STAFF POSITION OF ASSISTANT WILDLIFE WARDEN'S OFFICE**

Sl.no	Staff	Present Strength	Proposed Strength
1	Asst.Wildlife Warden	1	1
2	Wildlife Assistant	Nil	1
3	Deputy Ranger	Nil	2
4	Forester	5	6
5	Forest Guard	8	16
6	Reserve Watcher	3	4
7	U.D.Clerk	1	1
8	L.D.Clerk	Nil	1
9	Typist	Nil	Nil
10	Jeep Driver	1	1
11	Peon	1	1
12	Part time sweeper	Nil	1
13	Boat Driver	Nil	Nil
14	Watcher cum cook(IB)	Nil	Nil

**TABLE 23: ADDITIONAL STAFF REQUIREMENTS FOR THE OPERATION OF FOREST STATIONS(Proposed)**

Sl.no	Staff	Present Strength	Proposed Strength
1	Deputy Ranger	0	2
2	Forester	5	6
3	Forest Guard	8	16
4	Forest Watcher	4	4
5	Driver	0	2

### 6.3.1.2 Communication & Protection Measures

- Improvement and maintenance of all existing Roads, Trek Paths, Bridges, Culverts, Fence etc (list 3.8.2) In addition, the following new Roads and Trek Paths are proposed. The Sanctuary is having an Inter-State boundary of 21.81Km and because of inaccessibility to this area the protection strategies are not effectively done. New trek paths and roads are necessary for carrying out regular patrolling in those areas. Although the Sanctuary is having Wireless Network, this is also not maintained. So regular maintenance of Wireless system and Walkie-talkies have to be carried out

**TABLE 24: PROPOSED TREK PATHS & ROADS**

Sl.no	Trek Paths	Distance (Km)	GPS Reading
1	Chintharmani	10	08 <sup>0</sup> 52'41.9"N 077 <sup>0</sup> 7'21.4"E- 08 <sup>0</sup> 51'35.9"N 077 <sup>0</sup> 10'77.3"E
2	Pandimotta- Alwarakucrichi	12	08 <sup>0</sup> 49'33.8"N 077 <sup>0</sup> 12'58.2"E-
3	Umayar-Thalaimalai	15	08 <sup>0</sup> 53'15.3"N 077 <sup>0</sup> 9'47.4"E-
4	Darbhakulam gate- Pulmeth	8	08 <sup>0</sup> 55'20.7"N 077 <sup>0</sup> 12'6.7"E- 08 <sup>0</sup> 55'8.2"N 077 <sup>0</sup> 12'7.5"E
Sl.no	Roads	Distance (Km)	
1	Mannanthara- Darbhakulam	30	

- Periodic maintenance of all existing buildings (list 3.8.1)
- Procurement and maintenance of Jeep, Bike, Boat and Field equipments
- The Assistant Wildlife Warden should ensure that all Department Staff are using Department supplied mobile sim cards and they are returned back to office once an official is transferred
- Vista clearance

### **6.3.1.3 Fire Protection Measures**

- Clearance, maintenance of fire lines listed in the management plan (list 3.10d).
- Early controlled burning of grasslands on rotation basis
- Participatory fire management involving the local stakeholders' and awareness creation
- Engaging daily wages mazdoors for fire protection

### **6.3.1.4 Habitat Improvement**

- Eradication of invasive and exotic weeds
- Desilting and maintenance of water holes (list 2.5.2). In addition new check dams are proposed at strategic locations like Pallivasal, Rockwood etc.
- Catchment area protection by planting indigenous species and appropriate soil and moisture conservation works
- Conservational measures for Myristica Swamps, the details of which are given below

**TABLE 25: DETAILS OF MYRISTICA SWAMPS**

<b>Sl.No</b>	<b>Location of Myristica Swamps</b>	<b>Approximate Area in Ha</b>	<b>GPS Readings</b>
1	Mankuthu – 3 bits	6	08 <sup>0</sup> 54'50.9"N 077 <sup>0</sup> 06'22.4"E
2	Onnam Mile – 3 bits	3	08 <sup>0</sup> 54'47.8"N 077 <sup>0</sup> 06'29.5"E
3	Choodal Bit – 3 bits	5	08 <sup>0</sup> 54'49.4"N 077 <sup>0</sup> 05'45.0"E
4	Paappamkuzhy	2	08 <sup>0</sup> 54'28.1"N 077 <sup>0</sup> 05'13.0"E
5	Vilakkumaram	2	08 <sup>0</sup> 54'15.5"N 077 <sup>0</sup> 05'25.1"E

6	Onnam Janda	2	08 <sup>0</sup> 53'47.3"N 077 <sup>0</sup> 05'40.9"E
	<b>TOTAL</b>	<b>20</b>	

#### **6.3.1.5 Studies/Data Collection**

- Study on the habitat and biology of Lion Tailed Macaque and their monitoring
- Study on the presence of private estates and their impact on sanctuary management
- Study of subtropical hill forest at Alwarakurichi and Pandimotta
- Mapping of vegetation, Drainage, Water holes etc
- Wildlife Monitoring
- Documentation of flora and fauna, Impact of invasive weeds
- Conduct periodical surveys and assessment of animal populations
- Rapid biodiversity assessment

#### **6.3.1.6 Conservation Awareness**

- Take strict steps to make the Sanctuary a plastic free Zone and levy fine from rule violators
- Conducting Nature Camps
- Promoting paid nature camps
- Display of awareness/sign boards
- Workshops, seminar and public awareness programmes
- Development and distribution of brochures, posters, leaflets and pamphlets
- Preparing a documentary on Shendurney

#### **6.3.1.7 Wildlife Veterinary Care**

- Vaccination of cattle in the private estates and surrounding areas
- Provide support for equipments, medicines and manpower
- Prepare and implement wildlife health monitoring protocol
- Phase out scientific relocation of Spotted Deers to the wild based on their habitat requirements only
- Vaccinating the canines
- Veterinary facilities for controlling of disease
- Creation of rescue camps and mobile rescue cages

- Purchase of tranquilization, rehabilitation equipments

### **6.3.2 PLAN FOR CORE ZONE**

The areas such as Pandimotta, Alwarkurichi, Umayar, Aruliyar, Narathar, Dharbhakulam etc having a total extent of around 75.5sq.km comprises the Core Zone. All the strategies proposed in the protection plan will be strictly practiced in this zone. No further developments other than the prescriptions in the management plan can be implemented in this zone. No tourism activities, interior camping and trekking shall be allowed here except for research purposes.

### **6.3.3 PLAN FOR BUFFER ZONE**

The Buffer Zone comprises of an area about 47sq.km wherein part of the reservoir area is also included. All the strategies proposed in the protection plan will be strictly practiced in this zone also. The visit to Pallivasal shall be regulated under strict control. No interior camping and trekking shall be allowed here.

### **6.3.4 PLAN FOR ECOTOURISM ZONE**

Ecotourism Zone consists of nearly 48.35sq.km which includes a large portion the Reservoir too. An Ecotourism Plan must be developed and implemented by the Wildlife Warden in a phased manner involving the local communities. All the tourism activities, trekking, bird watching trails etc shall be carried out only in this Zone.

## **6.4 THEME PLANS**

Shendurney Wildlife Sanctuary shall be managed by the following Theme Plans.

- Protection Plan
- Fire Plan
- Ecotourism Plan
- Water Resource Management Plan

### **6.4.1 PROTECTION PLAN**

Shendurney Wildlife Sanctuary is divided into various compartments with required number of Anti Poaching Camp Sheds with 1 new Camp Shed proposed. The Wildlife Warden will prepare and implement the protection plan every year based on the following parameters.

- Division of Sanctuary into patrolling units
- Formation of patrolling team & intelligence gathering
- Surprise checks and raids at sensitive areas
- Staff welfare activities
- Adequate supply of arms and ammunitions.
- Timely maintenance of camp sheds/watch towers etc
- Engaging daily wages protection mazdoors
- Associating EDC members in protection activities
- Involving local people in participatory forest protection

#### **6.4.2 FIRE PLAN**

Uncontrolled forest fire is a threat to the forest and cause damage to flora and fauna. Wildlife Warden will prepare and implement fire plan every year considering the following parameters.

- Fire prone area (list 3.4.2)
- Participatory fire management activities, tracing fire lines and awareness creation
- Fire fighting tools
- Effective use of satellite transmitted data for fire control

#### **6.4.3 ECOTOURISM PLAN**

- A master plan including all basic facilities needed for the successful functioning of ecotourism shall be prepared by the Wildlife Warden and implemented step by step
- Close monitoring of the Ecotourism activities and assess the impact
- Training to Staff and EDC members on visitor management
- Develop stickers, brochures, sign boards, pamphlets etc and periodic updation of sanctuary website
- Take steps to make the place plastic free and levy fine from rule violators

#### **6.4.4 WATER RESOURCE MANAGEMENT PLAN**

The utilization of habitat by the wild animals depends on the availability of water source within their reach. The Kallada Reservoir plays a significant role in augmenting the water

supply to the fauna of the sanctuary. The following activities are proposed for the effective water resource management of the sanctuary

- Preparation of a drainage map
- Installation of meteorological station
- Annual maintenance of water holes and check dams (proposed)
- Construction of mini check dams at strategic areas
- Protection of the Catchment area by planting indigenous species and appropriate soil and moisture conservation measures

## **CHAPTER 7**

### **ECO TOURISM, INTERPRETATION & CONSERVATION**

#### **EDUCATION**

##### **7.1 AN OVERVIEW**

The concept of Ecotourism emerged in the late 1980's and is now catching up with the Union Ministry of Environment and Forests, with the Tourism Ministry responding with policy initiatives. Wilderness based recreation has an important value and has an important role in support of management. It can directly benefit the cause of conservation, bring about economic benefit to local communities and open the way for conservation education of local people and visitors. However, uncontrolled and unmanaged tourism strangles PA management. It can tie down wildlife managers almost full time in its activities at the cost of his primary responsibilities of forest protection. The main goal is to strengthen the cause of conservation in general and of the management of the PA in particular through (i) Providing informed wilderness experience to visitors (ii) Enabling the visitor to view a cross section of PA values. The following facilities related to environment conservation awareness and nature based tourism are available in the Sanctuary. (i) Information Centre (ii) Dormitory (iii) IB.

## **7.2 THE VISION & STRATEGIES OF THE PLAN**

### **7.2.1 VISION**

*“To promote environment conservation awareness and regulate nature based tourism”*

### **7.2.2 STRATEGIES**

#### **7.2.2.1 Environment Conservation Awareness**

- Develop an Interpretation Centre with scientific inputs
- Improve facilities in the Information centre/IB etc
- Create a team of trained manpower for organizing conservation education, ecotourism and eco-development activities
- Conduct nature awareness camp for various target groups, preference need to be given to local schools and communities (list 3.5)
- Conduct public awareness programme on nature conservation
- Develop education materials focusing wildlife for various target groups-leaflets, brochures, pamphlets, posters, stickers etc
- Procure equipments such as computer, GPS, laptop, digital camera, audio visual equipments etc for conducting nature camps effectively
- Prepare a professional documentary and website for the Sanctuary with regular updation
- Develop a herbal garden of medicinal plants
- Improve the camping facilities in the Dormitory
- Upgrading facilities and proper maintenance of Deer Rehabilitation Centre

#### **7.2.2.2 Facilitating nature based regulated tourism**

- Capacity building and training to EDC members and staff on human behaviour, visitor management, ecotourism, identification of flora and fauna etc
- Design and implement outreach activities
- Create awareness among local communities/visitors on PA
- Legal enforcement with fine to control littering
- Develop basic amenities to the visitors such as pure drinking water. Toilets etc
- Procurement of equipments for ecotourism such as binocular, boat, life jacket, torch, etc

Wildlife Warden will conduct annual review of environmental conservation programmes and nature based regulated tourism activities. The tourism activities need to be strictly controlled and regulated. Under no circumstances, trekking and interior camping in the core zone should be allowed. Trekking and bird watching trails shall be conducted in the Ecotourism area only. EDC's will be assisting in the ecotourism activities, which shall be under the full control and supervision of Forest Department. .Ecodevelopment surcharge shall be levied from visitors and must be recycled for the sanctuary management and ecotourism programmes.

## **CHAPTER 8**

### **ECO DEVELOPMENT**

#### **8.1 AN OVERVIEW**

Ecodevelopment is seen as a site specific conservation friendly package of measures for environmentally compatible development. The primary objective of eco-development programmes is for reducing the dependency of forest and forest side dwelling communities on forest based natural resources. Social and economic acceptability are integral to such a package that leads to conservation of biological diversity. The protected area is strategically zoned and correspondingly managed. To make the strategies work, the managers need to be clearly aware of the socio economical, cultural and lifestyle related profiles of the forest side communities. It is essential to improve the current practices and also develop ecologically sustainable and economically viable packages of alternatives that are acceptable to people; i.e. those packages which are self sustaining and in harmony with the surrounding forests and PA. To succeed, eco-development must enlist the willing participation of the people concerned, and mutual trust between Forest department and people is a vital element in this process.

#### **8.2 THE VISION & STRATEGIES OF THE PLAN**

##### **8.2.1 THE VISION**

*“Strengthening People-PA interface through ensuring continuous involvement of EDC’s in the overall protection of the Sanctuary”*

**8.2.2 ISSUES**

- (i) Fire
- (ii) Revamping the EDC’s
- (iii) Lack of Alternative livelihood options
- (iv) Firewood collection & pollution
- (v) Man-animal conflict

**8.2.3 THE STRATEGIES**

**8.2.3.1 Fire**

- Impart awareness programme to EDC members and school children
- Involve Forest Dependant Community in the participatory fire management
- Seek assistance/fund from the Local Self Government for Fire prevention activity and control measures through NREGS
- Procure Fire fighting equipments and impart training to the EDC members

**8.2.3.2 Revamping the EDC’s**

- Take steps to revamp the active EDC’s
- Explore possibilities of revamping the inactive EDC’s
- Impart training to Staff and Dependant Communities

**8.2.3.3 Lack of alternate livelihood options**

- Explore possibilities of developing finished products of handicrafts
- Impart training to EDC members
- Linkage with similar organizations

**8.2.3.4 Firewood collection and pollution**

- Provide LPG gas, Biogas, Fuel Efficient Choolahs etc to the poor Forest Dependant Community
- Awareness campaign
- Propose Fuel Wood Plantation in Private and Public area
- Study the Extent and impact of firewood collection
- Display awareness boards
- Supply biodegradable carry bags to settlement and fringe area population

- Establish waste bins in the pollution prone area
- Develop recycling method of plastics and other non degradable material

#### **8.2.3.5 Man animal Conflict**

- Maintenance of existing solar fencing, etc
- Vista clearance
- Institution for crop insurance
- Planting of agave Americana, caesalpinia etc as bio fence along the boundaries and other necessary locations

#### **8.3 ECO DEVELOPMENT INITIATIVES**

- Alternate livelihood practice
- Scholarship to the forest dependent community childrens
- Setting up of self help group
- Conducting medical camps
- Opening of Eco shops

The Ecodevelopment committees must meet together at least once in a month and evaluate their activities. The Assistant Wildlife Warden should attend such meeting. The Wildlife Warden should ensure the monthly meeting of the EDC's.

# CHAPTER 9

## **RESEARCH, MONITORING & TRAINING**

### **9.1 AN OVERVIEW**

Research and Monitoring are among the weakest areas in Wildlife Management. Research need not necessarily be only biological or ecological but those of sociology and economics are equally important. However, the progress achieved in this area is not satisfactory. Research has suffered due to lack of policy, clarity of objectives, priorities and inadequate funding. It needs to be something that can directly contribute towards improvement of management and for this to be achieved research need to be initiated and rigorously conducted. Knowledge and techniques that can be used to enhance the quality of management and provide appropriate response to management issues are necessary. Training to the staff is yet another critical aspect in maintaining management capability. Training needs must relate to PA management objectives, and should be developed as a theme plan addressing visualized function at all levels as per activities projected in the plan.

### **9.2 THE VISION**

*“Undertaking long term research for gathering scientific inputs for the better management of the sanctuary components and to equip staff with scientific knowledge for professional management of the sanctuary”*

### **9.3 THE STRATEGIES**

#### **9.3.1 Research**

- Study on the habitat and biology of Lion Tailed Macaque & mapping of the critical wildlife habitats.
- Study of unique ecosystem such as Myristica swamps
- Study the biodiversity of subtropical hill forest at Alwarakurichi and Pandimotta
- Study on the presence of private estates and their adverse impacts and socio economic survey of the people near fringe areas
- Wildlife census and rapid biodiversity assessment
- Documenting the flora and fauna of the PA
- Periodical surveys and assessment of animal populations
- Vegetation mapping of the Sanctuary
- Drainage mapping including mapping of Check dams, Water holes etc
- Studies on invasive species
- Wildlife Warden to strictly ensure the results of all research activities conducted are maintained in the office.
- Impact of ecotourism

#### **9.3.2 Monitoring**

- Monitoring Lion Tailed Macaque, their reproduction and habitat
- Regular Wildlife health monitoring
- Monitoring the follow up activities conducted by the nature camp students
- Monitoring Ecotourism impact and initiating necessary steps for resolving the same
- Monitoring the regeneration in the grasslands and degraded forests

#### **9.3.3 Training**

- Impart training to Staff and EDC members on wildlife health monitoring, camera trap etc
- Impart training to Staff on GPS, computer application etc

- Training to Staff in weapon handling and maintenance
- Capacity building for Staff in intelligence gathering, identifying wildlife article, acts & rules etc
- Capacity building and training to guides and Staff on visitor management.
- Training to Staff and EDC members on record maintenance and accounts of EDC
- Capacity building of local communities for Ecotourism programmes
- Seminars and workshops for local stakeholders
- Capacity building training for coordinating nature camps

## **CHAPTER 10**

### **ORGANIZATION & ADMINISTRATION**

#### **10.1 AN OVERVIEW**

Organizational pattern, responsibilities of officials at various levels and their functions etc is a key component in PA management. Often wildlife staff is posted in inhospitable areas but rarely the minimum support needed to sustain such postings is planned or if planned it is not available. The amenities provided to the staff such as housing, special pay, field equipment, communication, incentives and awards is very much important in the day to day administration of the PA. This should be done in accordance with the existing situation and needs of the PA.

#### **10.2 THE VISION**

*“Upgrading the existing facilities in the Sanctuary to meet the challenges of biodiversity conservation and effective protection of the Sanctuary”*

#### **10.3 THE STRATEGIES**

The present organizational structure of the Sanctuary

**Chief Conservator of Forests-1**

Agasthyavanam Biological Park

(Thiruvananthapuram)



**Wildlife Warden-1**

(Shendurney)



**Assistant Wildlife Warden-1**

(Shendurney)



**Foresters- 5**

(Kalamkunnu-1, Eettappadappu-1, Kalluvarambu-1, Headquarters-1, Ecotourism-1)



**Forest Guards-8**

(Kalamkunnu-2, Eettappadappu-3, Kalluvarambu-3)

The Sanctuary will be headed by the Wildlife Warden who has the overall responsibility of implementing the plan. He has to prepare a schedule of operation for the implementation of the plan and provide it to the Assistant Wildlife Warden and Section Foresters. He has to prepare the Annual Plan of Operation and the Schedule of Operations based on the plan every year in the first week of April. The Wildlife Warden shall not divert from the management plan prescription without the prior permission in writing of the Chief Wildlife Warden. **The Wildlife Warden should ensure that all the control forms prescribed in the Management Plan are properly recorded and maintained.** The Assistant Wildlife Warden at Shendurney with the assistance of Protective Staff should look after the day to day Administration, Protection and Management of the Sanctuary. Special protection camps will be organized at least once a month wherein the staff along with watchers will camp for 3-4days in the interior parts of the forests and patrol the area. EDC members shall also be involved in the various protection activities of the sanctuary. **Considering the extent of the area, the plan proposes to upgrade the two Forest Sections into two Forest Stations, the one being**

**Kallar Forest Station comprising the whole of Kalluvarambu Section(90sq.km) and Rosemala Forest Station comprising whole areas of Eettappadappu Section and Kalamkunnu Section(81sq.km) which is very much essential for the effective protection and management of the sanctuary. 2 Deputy Rangers, 1 Forester, 8 Forest Guards and 2 Drivers are additionally required. The plan aims to purchase 4 new jeeps, 2 boats, and 2 bikes for improving the communication and protection activities once the Forest Stations start functioning.** As an initiative to encourage public participation in curbing wildlife crimes and other forest offences, certain amount of money shall be given to the informers for providing vital information to the forest department.