

# CHAPTER 1

## INTRODUCTION TO THE AREA

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

The River Neyyar originates from the Agasthyamalai peak, which the legends say is the home of sage 'Agasthya'. The water in Neyyar is therefore considered as Ghee and hence the name 'Neyyar'. The Sanctuary falls between 8°17' and 8°53'N latitude and 76°40' and 77°17'E longitude and is located in the Kerala state, Thiruvananthapuram district. It was notified as a Wildlife sanctuary in 1958 as per Notification No. G.O(MS)871/58/AD dated 06.08.1958. The boundaries were subsequently modified vide GO No.2305/F2/71/AD dated 18.03.1971 by adding Neyyar Reservoir area also as a part of the sanctuary. The area was previously part of Thiruvananthapuram Forest Division up to 1982. During 1982, a separate Wildlife Division was formed with Headquarters at Thiruvananthapuram for better and effective management of the sanctuary. Neyyar, with an extent of 128sq.km is one of the two wildlife sanctuaries under Thiruvananthapuram Wildlife Division, the other being Peppara wildlife sanctuary. Another Range having 23sq.km area namely the Agasthyavanam Biological Park is sandwiched between these two sanctuaries, which also fall under the administrative control of the Thiruvananthapuram Wildlife Division.

### 1.2 APPROACH & ACCESS

The Sanctuary is located on the western slopes of the Southern Western Ghats along the southeast corner of Kerala in Neyyattinkara taluk of Thiruvananthapuram district. The Headquarters of the sanctuary is at Neyyar. The nearest Railway Station is Thiruvananthapuram which is 33 Kms away from the sanctuary. The nearest Airport is Thiruvananthapuram International Airport which is 43 Kms away, and the nearest Bus Station is Kattakkada which is 11 Kms away from the sanctuary. Frequent buses operate between Kattakada and Neyyar Dam.

### 1.3 BOUNDARY DESCRIPTION & CONDITION OF BOUNDARIES

Neyyar Wildlife Sanctuary is having well defined natural boundaries. The sanctuary is lying more or less continuous with a vast stretch of Reserved Forests in Kerala and

TamilNadu. Agasthyavanam Biological Park and Peppara wildlife sanctuary surround the Neyyar sanctuary on the north, private land on the south and west, and the Kalakkad-Mundanthurai Tiger Reserve of Tamilnadu on the east shares the boundaries of Neyyar wildlife sanctuary(Map 1). The topographic features and the aerial view(Google image) of Neyyar wildlife sanctuary is shown in (Map 2 & 3) respectively. The outer boundaries of the sanctuaries are well demarcated and intact.

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

Neyyar Wildlife Sanctuary is divided into three zones namely Core, Buffer, and Ecotourism zone respectively.

The **Core Zone** of the sanctuary is located on the eastern part of the sanctuary with fairly undisturbed forests on the north-eastern border. The boundary starts from Kombai into the valley lying between the reservoir and up to the State border with Tamilnadu. The extent of the Core zone is around 68sq.km which constitutes nearly 60% of the total area. Ananirathi, Venkulamedu, Pulivizhunthanchuna, Varayattumudi, Meenmutty, Theerthakkara, Kaduvappara, Athirumala regions comes under this zone. The Core zone is the region where human interference is strictly prohibited.

The **Buffer Zone** is located on the western part of the sanctuary and has an extend of about 40sq.km. The areas of Valliyar, Mullayar, Utharamkayam etc comes under the Buffer Zone. The Buffer Zone consists of many tribal settlements and the human intervention has hindered conservational efforts.

The **Ecotourism Zone** has an extend of around 20sq.km which includes the water spread area of the reservoir and the adjoining forests. The tourism activities including boating, trekking, bird watching trails etc are restricted to this Zone.

#### **1.5 STATEMENT OF SIGNIFICANCE**

Neyyar Wildlife Sanctuary with a wide variety of flora and fauna forms a part of the Agasthyamalai Biosphere Reserve and thus forms a critical component of a major conservational complex in the Western Ghats, one among the 34 biodiversity hotspots in the world. The Sanctuary lies within the catchment area of Neyyar River which originates from the slopes of Agasthyarkoodam(1868m), the highest peak in the Sanctuary. These

protected areas in the Agasthyamalai hills comprises the Agasthyamalai Biosphere Reserve with a total extent of 3,500sq.km of which 1,828sq.km is in Kerala and 1,672sq.km in Tamilnadu. The Western Ghats, Agasthyamalai sub cluster, including all of Agasthyamalai Biosphere Reserve is under consideration by UNESCO World Heritage committee for selection as a World Heritage Site.

The floral and faunal diversity of Neyyar Wildlife Sanctuary is really noteworthy. Around 1000 species of flowering plants are seen in the Sanctuary of which nearly 12% are endemic to the region many of which are endangered. 125 species of Orchids, 43 species of Mammals, 217 species of Birds, 46 species of Reptiles, 13 species of Amphibians, 27 species of Fishes, 109 species of Butterflies, and are seen in the Sanctuary. Western Ghat endemic species such as Lion Tailed Macaque, Nilgiri Langur, and Nilgiri Tahr are found in the sanctuary. Research conducted by few scientists have revealed Neyyar Wildlife Sanctuary houses the single largest population of Nilgiri Tahr in Kerala after Eravikulam National Park. The presence of Tiger has been confirmed from several parts of the Sanctuary during 2010 by indirect evidences like scat, pugmark, and kills.

A large number of medicinal plants are present in the Sanctuary, with many plants of medicinal importance still being discovered from the region. 'Arogyapacha' (*Trichopus zeylanicus*) which is widely distributed in the Sanctuary is a sought after medicinal herb known for its anti fatigue properties. The Sanctuary is an abode to a variety of rare, threatened and endemic species of flora and fauna of conservational importance. It is also one among the most sought after ecotourism destinations in Kerala. The Crocodile Rehabilitation and Research Centre, Lion Safari Park, Deer Rehabilitation Centre, Tree top hut at Utharamkayam are among the major tourist attractions of Neyyar. A Crocodile farm established in 1977 and a new Crocodile Park and Research Centre named Agasthya Crocodile Park and Research Centre established in May 2007 is home to 42 Mugger Crocodiles. The Lion Safari Park is home to 7 Lions and the Deer Rehabilitation Centre accommodates 80 Spotted Deers. Moreover, the nature study centre and medicinal garden

and interpretation centre at Marakunnam also provides knowledge and recreation to the visitors.

The **Deer Rehabilitation Centre** was started in 1984 with 12 Deers being brought from Thiruvananthapuram Zoo to allow the animals to grow in its own natural environment. The project initially started in 4ha of land in Meenmutty with a temporary shelter and fencing. However the fencing was destroyed and management problems led to the release of these animals into the wild in 1985. However, the Deer Rehabilitation Centre was re-established in 1995 in 4.6ha of land at Vlavetty. The main aim for this project was to observe the changes in the animals in the natural habitat to that in the Zoo enclosures, to increase the reproductive capacity of the Deers and to facilitate educational and research purposes. Due to the uncontrolled increase in the number of Deers, 30 animals were again released to the wild in 2005. This wasn't very successful since the captively bred animals were easily susceptible to predation and the closed forests on Neyyar being unable to offer the typical habitat of Spotted Deers, which is the deciduous or semi evergreen forests, grasslands and scrub jungle(eg: Chinnar WLS). However few animals are still seen surviving in the wild, but close to the Rehabilitation centre and human habitation. Presently the Rehabilitation Centre is home to 80 deers with 18 males, 35 females and 27 infants. Another additional 4ha of land was fenced and added to the present centre making the total extent of the Rehabilitation centre to 8.6ha.

The **Crocodile Park** was started in 1977 with 9 fresh water crocodiles being brought from the Madras Crocodile Bank with the objective of captive breeding and releasing into their natural environment. 32 cages were erected to accommodate the animals. Now there are 25 Crocodiles in 18 cages During 1985-86, 30 crocodiles were released into the Neyyar Reservoir many of which are still surviving. Subsequently due to the opposition from local people, further release wasn't carried out. In 2007, a Crocodile Park and Research Centre was started with the objective of conducting research on Crocodiles. It was first named as Steve Irwin Crocodile Park and Research Centre but due to certain legal problems it was again changed to Agasthya Crocodile Park and Research Centre. Presently 17 Crocodiles are kept in 2 ponds in their natural environment in this Centre.

The **Lion Safari Park** was established in 1984 at Marakkunnam island in 10 acres of land having a peripheral iron bar fencing of 1.3km. During that period 3 Lioness and 1 Lion was brought from Thrissur Zoo. The main objective of the park was to give an amazing experience to the tourists and to provide a natural environment for the life and reproduction of Asian Lions. It was opened to the public on January 1985, but unfortunately it was not a success. After studying the drawbacks of the project, it was restarted during 1992. Now the lions are purely brought up here and a total of 7 lions including 5 Lioness and 2 Lions survives in the Park. The males were vasectomized as they were not pure breed of Asiatic lions and therefore the population remains constant. A unique aspect of the Lion Safari Park is that people travel in closed vehicles and the animals are freely roaming in their natural environment.

An observatory was established at Agasthyarkoodam by the erstwhile British rulers, the reminiscences of which are seen on the way to Agasthyarkoodam from Athirumala. Dilapidated portions of building, parts of rusted machines can be seen in the midst of tea and cardamom seedlings grown here and there. The Nettukaltheri open jail shares its boundary with the sanctuary. Established during 1962(*as per local information*) this jail is having 486 acres of land received on lease basis, out of which they transferred 12 acres to cooperative management. Presently the jail is having 474 acres of land.

The water from Neyyar Dam is used for the irrigation purposes in Thiruvananthapuram and Kanyakumari Districts. Along with the visit to Agasthyar Peak, hundreds of people visit Neyyar to take a boat ride through the reservoir enjoying the magnificent natural beauty of Neyyar Sanctuary. All these adds to the significance of preserving the pristine environment of Neyyar.

## **1.6 HISTORY OF NEYYAR DAM**

The Neyyar Dam is a concrete gravity dam with a height of 101mts and a length of 294.83mts. It was officially inaugurated on 15/12/1951 but was commissioned on 09/02/1959 primarily for irrigational purposes. The cubical capacity of the water that the Dam can withstand is  $106.20\text{mm}^3$ , FRL is 84.75mts and water spread area is 9.1sq.km. The Dam is having 2 canals and 4 main spillway shutters. The 2 canals were constructed

for the purpose of irrigation in Kerala and Tamilnadu. In 2004, irrigation through left canal was stopped which was supplying water to Kanyakumari district. Human casualties in the reservoir since its commissioning are shown below.

**TABLE 1: DETAILS OF HUMAN CASUALTY**

| <b>Sl. no</b> | <b>Name of the Kadavu</b> | <b>year</b> | <b>No.of person died/injured</b> | <b>Reasons</b> |
|---------------|---------------------------|-------------|----------------------------------|----------------|
| 1             | Panthaplamoodu            | 1991-92     | 7/5                              | Capsized       |
| 2             | Charakkupara              | 1995        | 2/0                              | “              |
| 3             | Chengadukavu              | 1995        | 1/0                              | ”              |
| 4             | Panthaplamoodu            | 1997-99     | 4/0                              | ”              |
| 5             | Erappamkuzhi              | 2009        | 1/0                              | ”              |
| 6             | Parathi-mayam             | 2008        | 1/0                              | ”              |
| 7             | Chengada kadavu           | 2000        | 1/0                              | ”              |

# CHAPTER 2

## BACKGROUND INFORMATION & ATTRIBUTES

### 2.1 BOUNDARIES

#### 2.1.1 External

As per the notification No. 2305/F2/71/AD dated 18-03-1971 the boundary description is as follows:-

**North:** Starting from Mlavetty, a point about 2.41Km North-East of Neyyar Dam site, the boundary runs along the eastern boundary of Paruthippally Range of Thiruvananthapuram Forest Division up to Karimalakari at 636m, passing Chattupara at 491m and then along the common boundary of Neyyar and Peppara Sanctuaries and runs along the North-East direction along the watershed line between Neyyar and Karamana rivers passing Meppimalai at 710m, Kannukunnu, Nachiyadikunnu at 985m upto Athirumala at 1594m, the State boundary.

**East:** Starting from Athirumala, the boundary runs along the state boundary passing Agasthyamala at 1868 m, Vavattimala at 1862m, Varayattumudi at 1416m, and the points of 662m and 701m upto Vengulamala at 756m.

**South:** From Vengulamala, the boundary runs along the state boundary up to Anamugham and then along the level of FRL to Neyyar Dam site.

**West:** From dam site the boundary runs along the FRL level up to Thooripara, a portion of Kottoor extension reserve, and then along the boundary of Nettukaltherikunnu reserve forests up to Mlavetty, the starting point.

The boundaries of the sanctuary are demarcated on the outer periphery. But the boundaries with the tribal settlements are not yet demarcated completely. This has led to small scale encroachments along the fringe areas of tribal settlements. However, now the GPS readings and survey sketches of all the colonies are available and any encroachment can be identified easily.

### **2.1.2 Internal**

No internal boundaries other than fire lines are demarcated on the ground. The Sanctuary is divided into three Sections namely Kottoor, Klamala I and Klamala II. Further, the Sanctuary is divided into three Zones namely Core, Buffer and Tourism. (Map 4)

## **2.2 GEOLOGY, ROCK, SOIL**

The dominant rock types in this area are Precambrian metamorphic belonging to the Khondalite group. Charnockite is also exposed at different locations. The occurrence of a semiprecious gemstone called Chrysoberyl and its mining is known since long. Magnetite quartzite is also seen in this tract. The underlying rock is principally gneiss. The gneiss has undergone lateritic decomposition in regions of heavy rainfall.

## **2.3 TERRAIN**

The Sanctuary is located on the western slope of the southern Western Ghats and the entire area lies within the catchment area of Neyyar River, which originates from the slopes of Agasthyarkoodam, the highest peak of the sanctuary. The terrain is undulating with elevation ranging from 100 to 1868m (Agasthyarkoodam). The important peaks of the sanctuary are Athirumala (1594m.) and Varayattumudi (1420m). Except some isolated hillocks, the area generally falls under moderately to highly undulating terrain units. The other geomorphologic units include low rolling zone and the reservoir formed by the construction of a dam at Neyyar. Steep slopes, cliffs and rocky outcrops characterize the eastern region of the sanctuary.

## **2.4 CLIMATIC ATTRIBUTES**

The climate is moderately hot and humid with moderate rainfall received during both the southwest and northeast monsoons.

### **2.4.1 Rainfall**

Rainfall is received during both the Southwest and Northeast monsoons. A few pre-monsoon showers in April and May precede the monsoon. The southwest monsoon, which brings in greater part of the rainfall bursts normally in the first week of June and lasts till the end of August. Breaks in the monsoons are frequent. The heaviest rainfall in the year occurs normally during June and July. The southwest monsoon is steady and gentle. Precipitation during the southwest monsoon are usually accompanied by strong winds. The northeast monsoon prevails during September to November. Following the

rains of Northeast monsoon, in the latter half of December heavy winds begin to blow from east and causes serious damage to tree growth.

**TABLE 2: RAINFALL MONTH WISE (MM)**

| YEAR | JAN   | FEB  | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   | OCT   | NOV   | DEC   |
|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2002 | 0.0   | 22.0 | 31.0  | 124.0 | 249.5 | 134.0 | 21.5  | 99.0  | 18.0  | 382.0 | 150.5 | 8.0   |
| 2003 | 0.0   | 12.0 | 64.5  | 150.0 | 135.0 | 215.0 | 145.0 | 102.0 | 0.0   | 476.0 | 240.2 | 4.0   |
| 2004 | 0.0   | 0.0  | 0.0   | 138.5 | 408.0 | 277.9 | 301.5 | 110.0 | 208.1 | 283.0 | 191.4 | 14.0  |
| 2005 | 0.0   | 0.0  | 30.0  | 453.5 | 299.0 | 261.5 | 116.0 | 16.0  | 148.0 | 254.5 | 262.0 | 107.0 |
| 2006 | 7.0   | 0.0  | 133.0 | 61.0  | 173.0 | 158.0 | 176.5 | 88.0  | 512.0 | 438.3 | 192.0 | 18.0  |
| 2007 | 0.0   | 0.0  | 1.0   | 184.0 | 94.0  | 266.5 | 285.5 | 171.0 | 293.5 | 283.5 | 209.5 | 23.0  |
| 2008 | 0.0   | 47.0 | 250.0 | 224.7 | 106.0 | 101.0 | 240.0 | 140.0 | 283.0 | 416.0 | 230.0 | 36.0  |
| 2009 | 0.0   | 0.0  | Xxx   | Xxx   | Xxx   | 102.0 | 88.7  | 79.0  | 95.0  | 101.0 | 450.3 | 29.0  |
| 2010 | 108.0 | 0.0  | 0.0   | 166.0 | 166.0 | 205.0 | 205.0 | 136.0 | 99.0  | 423.0 | 378.0 | 290.0 |
| 2011 | 67.0  | 64.0 | 5.0   | 115.0 | 92.0  | 191.2 | 52.0  | 65.0  | 128.3 | 145.9 | 232.5 | 133.6 |

Source: Meteorological Department

#### 2.4.2 Temperature

The Sanctuary consists of two climatic regimes, i.e., tropical and montane subtropical. The climate in the tropical area is moderately hot and humid. Diurnal variation in temperature is not more than 10°C. The maximum mean daily temperature in the plains during the hottest month of March is about 35°C while in the coldest month of January the temperature is about 21°C. The plains are generally hot and humid, while the hills are usually cooler and drier. The maximum mean daily temperature of the upper areas during the hottest month is about (32C.), while that in the coldest month of January is about 17°C. The mean maximum temperature of subtropical region is 24°C, and mean minimum is 13°C. February to May are the dry months and forest fires are common.

**TABLE 3: TEMPERATURE MONTH WISE(Mean Max)(°C)**

| YEAR | JAN  | FEB  | MAR  | APR  | MAY  | JUN  | JUL  | AUG  | SEP  | OCT  | NOV  | DEC  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2002 | 32.6 | 32.4 | 33.4 | 33.5 | 32.1 | 31.1 | 30.9 | 30.8 | 32.6 | 31.0 | 31.0 | 32.3 |
| 2003 | 32.8 | 32.6 | 33.1 | 33.8 | 33.5 | 32.4 | 31.2 | 31.5 | 33.0 | 31.6 | 31.6 | 32.9 |
| 2004 | 33.0 | 33.9 | 34.4 | 34.0 | 31.3 | 30.7 | 30.0 | 30.9 | 30.6 | 31.2 | 31.7 | 33.0 |
| 2005 | 32.8 | 34.0 | 34.3 | 32.9 | 33.2 | 30.9 | 30.2 | 31.8 | 30.9 | 31.7 | 30.6 | 31.3 |
| 2006 | 32.0 | 34.0 | 33.9 | 33.9 | 32.7 | 31.9 | 30.7 | 31.1 | 31.1 | 30.8 | 31.3 | 33.3 |
| 2007 | 33.0 | 33.1 | 34.1 | 33.8 | 32.8 | 31.2 | 30.2 | 30.7 | 30.7 | 31.2 | 32.0 | 32.2 |

|             |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>2008</b> | 33.3 | 33.3 | 31.8 | 32.5 | 32.9 | 31.4 | 30.6 | 31.3 | 31.4 | 31.8 | 31.2 | 32.3 |
| <b>2009</b> | 33.1 | 33.9 | 34.3 | 34.1 | 33.5 | 31.0 | 30.4 | 31.2 | 31.1 | 32.3 | 31.5 | 32.5 |
| <b>2010</b> | 32.5 | 33.6 | 35.0 | 33.9 | 33.0 | 31.6 | 30.5 | 30.3 | 31.2 | 30.8 | 31.0 | 30.8 |
| <b>2011</b> | 32.1 | 33.0 | 33.9 | 33.4 | 32.9 | 31.2 | 30.7 | 31.1 | 31.0 | 32.5 | 31.3 | 31.9 |

**TABLE 4: TEMPERATURE MONTH WISE(Mean Min)(<sup>0</sup>C)**

| <b>YEAR</b> | <b>JAN</b> | <b>FEB</b> | <b>MAR</b> | <b>APR</b> | <b>MAY</b> | <b>JUN</b> | <b>JUL</b> | <b>AUG</b> | <b>SEP</b> | <b>OCT</b> | <b>NOV</b> | <b>DEC</b> |
|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>2002</b> | 22.4       | 22.7       | 23.6       | 24.6       | 24.6       | 23.7       | 23.5       | 23.0       | 23.2       | 23.0       | 23.0       | 22.3       |
| <b>2003</b> | 22.0       | 22.8       | 23.3       | 24.4       | 25.0       | 23.6       | 22.8       | 23.0       | 23.1       | 22.8       | 22.5       | 21.3       |
| <b>2004</b> | 21.4       | 21.9       | 23.6       | 23.9       | 22.6       | 23.2       | 23.5       | 23.6       | 23.7       | 23.9       | 23.5       | 22.6       |
| <b>2005</b> | 22.9       | 23.4       | 25.1       | 24.7       | 25.6       | 24.2       | 23.8       | 23.8       | 23.8       | 24.0       | 23.5       | 22.8       |
| <b>2006</b> | 22.5       | 22.9       | 24.7       | 25.5       | 25.0       | 24.2       | 23.3       | 23.4       | 23.5       | 23.1       | 22.5       | 21.7       |
| <b>2007</b> | 21.8       | 22.4       | 24.1       | 25.3       | 25.2       | 24.0       | 23.5       | 23.9       | 23.7       | 23.4       | 23.0       | 22.7       |
| <b>2008</b> | 22.3       | 23.2       | 23.8       | 24.7       | 25.1       | 23.9       | 23.3       | 23.6       | 23.0       | 23.8       | 23.3       | 22.6       |
| <b>2009</b> | 21.9       | 22.5       | 24.6       | 25.5       | 25.7       | 24.4       | 23.6       | 24.0       | 23.9       | 24.1       | 23.4       | 23.7       |
| <b>2010</b> | 22.4       | 23.5       | 24.7       | 25.6       | 25.5       | 24.2       | 23.4       | 23.5       | 23.9       | 23.9       | 23.5       | 22.7       |
| <b>2011</b> | 22.8       | 23.1       | 24.2       | 24.8       | 25.4       | 24.6       | 23.8       | 24.1       | 24.1       | 24.4       | 23.2       | 23.1       |

Source: Meteorological Department

## **2.5 WATER RESOURCES**

The Sanctuary consists of several natural and artificial water sources to meet the needs of the wildlife, in addition to the Neyyar Reservoir. (Map 5)

**TABLE 5: WATER LEVEL IN NEYYAR RESERVOIR(Mts)**

| <b>Year</b> | <b>31<sup>st</sup> Mar</b> | <b>30<sup>th</sup> Jun</b> | <b>31<sup>st</sup> Oct</b> |
|-------------|----------------------------|----------------------------|----------------------------|
| 2002        | 79.60                      | 79.45                      | 81.50                      |
| 2003        | 77.85                      | 70.40                      | 77.65                      |
| 2004        | 72.90                      | 82.30                      | 84.20                      |
| 2005        | 77.90                      | 84.20                      | 83.75                      |
| 2006        | 77.80                      | 82.40                      | 84.30                      |
| 2007        | 78.10                      | 81.90                      | 84.10                      |
| 2008        | 82.75                      | 82.80                      | 84.00                      |
| 2009        | 79.65                      | 79.85                      | 82.70                      |
| 2010        | 81.35                      | 84.20                      | 83.80                      |
| 2011        | 81.90                      | 84.60                      | 84.55                      |

Source: Irrigation Department

### 2.5.1 Natural Sources

The Sanctuary is blessed with adequate water resources, the main source being Neyyar Reservoir. The main River, which empties into the reservoir, is Neyyar, which originates from Agasthyarkoodam. The reservoir provides water for irrigation purposes to Thiruvananthapuram district in Kerala and Kanyakumari district in Tamilnadu. From 2004 onwards water supply to Tamilnadu was stopped.

### 2.5.2 Artificial Sources

Over the past few years, the following **Water Holes** have been developed to augment water resources in the Sanctuary.

**TABLE 6: DETAILS OF EXISTING WATER HOLES**

| Sl.no | Waterhole                     | Section    | GPS Readings                    |
|-------|-------------------------------|------------|---------------------------------|
| 1     | Kallipara                     | Klamala I  | N 08*50'46"<br>E077*23'68"      |
| 2     | Kolinchikava                  | Klamala I  | N08*30'60"<br>E077*13'72"       |
| 3     | Padathalachi                  | Klamala I  | N08*30'55"<br>E077*14'57"       |
| 4     | Chokkanchadi                  | Klamala I  | N08*30'074"<br>E077*14'721"     |
| 5     | Arakku app                    | Klamala I  | N08*30'27"<br>E077*14'26.7"     |
| 6     | Mooppanapp                    | Klamala I  | N08*50'872'<br>E077*25'783"     |
| 7     | Iyyankuzhi                    | Klamala I  | N08*30'808"<br>E 077*14'179"    |
| 8     | Charapara                     | Klamala I  | N08*31'413"<br>E077*13'569"     |
| 9     | Kozhikkavu                    | Klamala I  | N08*30'824"<br>E077*12'884"     |
| 10    | Kallukadu                     | Klamala I  | N08*30'902"<br>E077*12'315"     |
| 11    | Chettanolichakon              | Klamala II | N 08*32'33.2"<br>E 077*13'23.7" |
| 12    | Bhoothaka<br>(chemmanamkunnu) | Klamala II | N 08*33'12.5"<br>E 077*13'34.9" |
| 13    | Ayiramkal                     | Klamala II | N 08*33'16.8"<br>E 077*12'57.9" |
| 14    | Mailady                       | Klamala II | N 08*32'09.7"<br>E 077*13'12.9" |

|    |  |            |                                 |
|----|--|------------|---------------------------------|
| 15 | Pulichimavinmoodu(in the trekpath of Neerazhipara) | Klamala II | N 08*32'42.6"<br>E 077*14'21.4" |
| 16 | Pulichmamoodu(part of Narayappu )                  | Klamala II | N 08*32'42.4"<br>E 077*14'24.1" |
| 17 | Poongulam (venkulam medu)                          | Klamala II | N 08*51'21.5"<br>E077*26'643"   |
| 18 | Njarakkavu   | Klamala II | N 08*32'36.3"<br>E077*10'48.6"  |
| 19 | Njarakkaavu  | Kottoor    | N08*33'179"<br>E077*11'404"     |
| 20 | Valavetty  | Kottoor    | N08*32'958"<br>E077*11335"      |
| 21 | Theerthakkara                                      | Kottoor    | N08*34'909"<br>E077*13'404"     |
| 22 | Cherupunna   | Kottoor    | N08*33'403"<br>E077*09'538"     |

All these water holes are almost perennial and are permanently used by wild animals. In addition to this, the following **Check Dams** have also been constructed.

**TABLE 7: DETAILS OF EXISTING CHECK DAMS**

| Sl.no | Waterhole        | Section   | GPS Readings   |
|-------|------------------|-----------|--|
| 1     | Anairathy        | Klamala I | N08*49'959"<br>E 077*24'12"                                |
| 2     | Mylamoodu        | Klamala I | N08*30'066"<br>E 077*14'363"                               |
| 3     | Arakku app 1 & 2 | Klamala I | N08*30'443"<br>E077*14'128"<br>N08*30'905"<br>E077*14'087" |
| 4     | Ayyankuzhi       | Klamala I | N08*30'905"<br>E077*14'087"                                |
| 5     | Meenmutty 1 & 2  | Kottoor   | N08*34'125"<br>E077*12'572"<br>N08*34'259"<br>E077*12'659" |
| 6     | Cherupunnathodu  | Kottoor   | N08*33'438"<br>E077*10'014"                                |

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

### **2.6.1 Vegetation**

Due to varied climatic and topographic conditions, the Sanctuary represents very remarkable diversity in vegetation. The floral diversity is very high with a relatively high percentage of endemism. It is estimated that nearly 1000 species of flowering plants are seen in the sanctuary. 12% of the identified plants are endemic to the region, many of which are endangered. Yet another noteworthy feature of the vegetation is the preponderance of orchids. About 125 species of orchids have been recorded from the sanctuary. The sanctuary is home to several rare, endemic and threatened plants such as *Bentinckia condapanna*, *Poeciloneuron pauciflorum*, *Humboldtia unijuga*, *Eugenia floccose*, *Eugenia discifera*, *Ardisia missionis*, *Eria bonaccordensis*, *Janakia arayalpatra*, *Dialium travancorium*, *Semecarpus auriculata*, *Polyscias acuminata*, *Paphiopedilum druryi*, *Eulophia macrostachya*, *Eulophia cullenii*, *Hetaria ovalifolia*, *Chiloschista glandulosa*. Vegetation of the area could be classified into:

- **Southern hilltop tropical evergreen forests**
- **West coast tropical evergreen forest**
- **West coast tropical semi evergreen forest**
- **Pioneer euphorbiaceous scrub**
- **Moist bamboo brakes**
- **Southern secondary moist mixed deciduous forest**
- **Myristica swamp forest**
- **Sub montane hill valley swamp forest**
- **Riparian forest**
- **Grasslands**

- **Southern subtropical hill forest**
- **Ochlandra reed brakes**
- **Bentinckia condapanna brakes.**

#### **2.6.1.1 Southern Hilltop Tropical Evergreen Forests**

This type of forest is a stunted evergreen forest and is found on top of hills, ridges and is floristically rich and is mainly confined to the eastern boundary of the Sanctuary. This type of forest is confined to altitude ranging between 1000m to 1300m above sea level. It is more or less and 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.

#### **2.6.1.2 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 type of forest occurs at higher slopes of the ridges along eastern border especially in the upper source of Neyyar. One of the outstanding features of the West Coast Tropical Evergreen Forest is the presence of an overwhelming majority of the plants which are woody and of large dimensions. Its vegetation consists of at least three tiers, the highest often attaining a height of 40 to 45 m. Very often the trees are buttressed at the base and the boles are clean, cylindrical, un-branched at least up to two-thirds of their height and generally with a spreading or umbrella shaped crown at the top. The middle stratum is more or less candle shaped and the lower characteristically conical. The trees are normally with orchids, aroids, mosses, ferns and lichens. Not only the trees but the climbers and epiphytes are also woody. The under growth largely consists of woody plants, seedlings, shrubs and young woody climbers.

The **upper storey** consists of *Mangifera indica*, *Artocarpus hirsutus*, *Vateria indica*, *Vitex altissima*, *Dipterocarpus bourdillonii*, *Palaquium ellipticum*, *Cullenia exarillata*, *Terminalia bellerica*, *Gluta travancorica* etc. The **middle storey** consists of species such as *Cinnamomum verum*, *Gordonia obtuse*, *baccaurea courtallensis*, *Canarium strictum*, *Hydnocarpus alpine* etc.

The **lower storey** comprises of species such as *Arenga wightii*, *Ixora arborea*, *Atalantia wightii*, while the ground floor consists of *Isonandra lanceolata*, *Pogostemon paniculatus*, *Glycosmis cymosa*, etc. Along the margin of streams large formations of *Ochlandra travancorica* and *Ochlandra wightii* are seen.

### **2.6.1.3 West Coast Tropical 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.

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 *Alstonia scholaris*, *Artocarpus heterophyllus*, *Baccaurea courtallensis*, *Calophyllum apetalum*, *Carallia brachiata*, *Madhuca neriifolia*, *Vateria indica*, *Vitex altissima* etc, while the **lower storey** consists of species like *Cinnamomum verum*, *Mallotus philippensis*, *Xanthophyllum arnottianum*, *Spondias indica*, *Bridelia retusa*, *Macaranga peltata*, *Gmelina arborea*, *Canarium strictum* etc.

Large areas on the ground are covered by *Costus speciosus* and *Globba ophioglossa* along with the herbs and shrubs like, *Miliusa wightiana*, *Desmodium pulchellum*, *Peperomia pellucida*, *Croton klotzschianus*, *Scleria terrestris* and *Thottea siliquosa*. The common climbers are *Sarcostigma kleinii*, *Adenia hondala*, *Butea parviflora*, *Calamus pseudotenuis*, *Calamus travancoricus*, *Strychnos minor*, *Entada rheedii* and *Piper longum*. Bamboo and reeds are fairly common along streams and adjacent areas.

#### **2.6.1.4 Pioneer Euphorbiaceous Scrub**

Before declaring the area as a Sanctuary, the tribals used to migrate from one place to another practicing shifting cultivation. Fast growing but short lived euphorbiaceous species like, *Macaranga*, *Mallotus*, and *Trema* got quickly established in the abandoned areas and predominated as the first colonizers in the secondary vegetation providing shade and shelter under which the slower and less adaptable species of the later stages established to form the dominant vegetation. The pioneer euphorbiaceous scrubs were virtually nurse crops for the regeneration of characteristic species to follow after a lapse of some years, provided seed bearers were available within the vicinity.

This type of forest is found in the Northeastern part of the Sanctuary and comprises mainly of species like *Macaranga peltata*, *Mallotus tetracoccus*, *Mallotus philippensis*, *Trema orientalis*, *Symplocos macrophylla subsp. zeylanicus*, *Terminalia paniculata*, *Aporosa lindleyana*, *Tabernaemontana divaricata*, *Olea dioica*, *Ficus hispida*, *Albizia odoratissima*, *Actinodaphne bourdillonii*, *Euodia lunu-ankenda* and *Alstonia scholaris*.

#### **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.

Stratification is not so prominent in this type of forests. The **upper storey** comprises of species such as *Terminalia paniculata*, *Pterocarpus marsupium*, *Albizia odoratissima*, *Artocarpus hirsuta*, *Hopea parviflora*, *Lagerstroemia microcarpa*, *Dalbergia latifolia*, *Bridelia retusa*, *Grewia tiliifolia*, *Mitragyna parviflora* and *Vitex altissima* while the middle storey consists of *Dillenia pentagyna*, *Careya arborea*, *Lanea coromandelica*, *Wrightia tinctoria*, *Mallotus philippensis*, *Emblica officinalis*, *Cassia fistula* etc.

The ground is covered with dense growth of grass-like *Panicum maximum*, *Cyrtococcum oxyphyllum*, *Imperata cylindrica minor*, *Pennisetum polystachyon*, *Pseudanthistiria umbellata* and *Themeda cymbaria* while the climbers include *Salacia chinensis*, *Salacia fruticosa*, *Butea parviflora*, *Adenia hondala*, *Jasminum rottelerianum*, and *Dioscorea bulbifera*. Shrubs and herbs like, *Acrotrema arnottianum*, *Artabotrys zeylanicus*, *Impatiens latifolia*, *Crotalaria albida*, *Crotalaria prostrata*, *Desmodium heterocarpon*, *Desmodium laxiflorum*, *Rhynchosia cana*, *Tamilnadia uliginosa*, *Vernonia conyzoides*, *Asystasia gangetica*, *Curcuma aromatica*, *Zingiber zerumbet*, *Carex beccans*, *Carex filicina*, etc. are also seen in some areas.

#### **2.6.1.6 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*. 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.

### **2.6.1.7 Tropical Sub-montane Hill Valley Swamp Forests**

This forest type occurs in narrow strip of water-logged area continuously wet for a fairly long time during rains and found mostly in depressions. The important habitat factor is the prolonged summer flood. Between the floods the soil dries out to varying extent and where it is heavy and retentive the available water may be scanty resulting in poor plant growth. Soil is rich in humus and continuously wet or at least moist. This forest is open and consists of evergreen trees of high ecological efficiency and is able to withstand the high moisture content of the soil. The trees are of medium height ranging from 10 to 25m. This type is of restricted occurrence in the sanctuary.

### **2.6.1.8 Riparian Forests**

According to Chandrasekharan (1962a, b & c) riparian forest is an edaphic formation on riverbanks dependent upon a constant supply of moisture and is a conspicuous association, met with along river banks in certain localities where *Vateria indica* is the predominant species. Riparian forests are found along water course where moisture regime is very favourable for growth. It is a unique and important type of forest ecosystem found in Neyyar Sanctuary. They are generally more productive in terms of biomass and they provide special microclimatic environment for a wide variety of biota. The riparian type has a dendric pattern that maximizes edge contact with other habitats. It also offers better cover, food and migration route for wildlife species. Besides these, it also serve as barrier for forest fire and have an important role in the conservation and functioning of river / stream ecosystems. However, these forests are degraded and becoming extinct due to various anthropological activities. This type of forests are seen in Kaviyar region of the sanctuary.

The **upper storey** consists of *Vateria indica*, *Calophyllum apetalum*, *Hopea parviflora*, *Lophopetatum wightianum*, *Artocarpus hirsutus*, *Gluta travancorica*, *Lagerstroemia microcarpa*, *Mangifera indica*, and *Gymnacranthera farguhariana*. The **lower storey** comprises of *Madhuca neriifolia*, *Vitex altissima*, *Aporusa lindleyana*, *Hydnocarpus alpina*, *Hydnocarpus macrocarpa*, *Olea dioica*, *Syzygium cuminii*, *Ixora arborea* and

*Xanthophyllum arnottianum*. The ground cover consists of *Impatiens umbellata*, *Impatiens verticillata*, *Memecylon angustifolium*, *Memecylon terminale*, *Torenia courtallensis* and *Pouzolzia wightii*. The common climbers are *Entada rheedei*, *Butea parviflora*, *Dioscorea wallichii* and *Calamus thwaitesii*. In certain areas large formations of bamboos and reeds are seen (*Ochlandra ebracteata* & *Ochlandra wightii*).

#### **2.6.1.9 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 eco tonic 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 the eastern region as a narrow belt where the interstate boundary coincides with the Kalakkad-Mundanthurai Tiger Reserve. Major portion of the subtropical forests occur at Athirumala region.

The characteristic trees in the **upper storey** are *Cullenia exarillata*, *Elaeocarpus munronii*, *E. tuberculata*, *Mesua nagasarium* and *Vateria indica*. The **middle storey** comprise of the younger generation of the first storey. The **lower storey** consists of *Nilgirianthus warrensis*, *Canthium neilgherrense*, *Hedyotis albo-nervia*, *Nilgirianthus foliosus*, *Nilgirianthus heyneanus*, *Scutellaria violacea* and *Pogostemon purpurascens*. The common climbers are *Jasminum cordifolium* and *Piper trioicum*.

#### **2.6.2 Wildlife**

Faunal diversity is considered to be a strong indicator of health of any ecosystem. An area of 128sq.km of sanctuary lying continuous with the Peppara wildlife sanctuary and Agasthyavanam biological park on the north and the Kalakkad-Mundanthurai Tiger Reserve on the east offers ideal habitat for the long term survival of several species of wildlife. The reservoir formed by the Neyyar Dam is the major source of water for the animals and habitat for several water birds.

Neyyar wildlife Sanctuary is home to 217 species of birds, 109 species of butterflies, 46 species of reptiles, 43 species of mammals, 27 species of fishes and 13 species of amphibians. Major Mammals include Tiger, Leopard, Sloth bear, Dhole, Elephant, Gaur, Nilgiri tahr, Barking deer, Sambar deer, Mouse deer, Wild boar, Pangolin, Slender loris, Lion tailed macaque, Bonnet macaque, Nilgiri langur, Nilgiri marten, Smooth coated otter, Toddy cat, Small Indian civet, Jungle cat, Leopard cat, Malabar giant squirrel, Flying squirrel, Mongoose, Porcupine, Sloth bear, Hare, etc. The recent frequent sightings of tiger in the sanctuary in 2010 is a strong indicator of the prey base and quality of habitat. The Nilgiri tahr population in the sanctuary is showing an increasing trend. 58 animals were sighted at Varayattumudi in 2001 (Abraham.*et.al*,2006). 60 animals were sighted later on in 2010 (D.Sandeep). V. Sharon (2010) in his 'survey on isolated populations of Nilgiri tahr in kerala' recorded a total of 76 animals and estimated the population here to be around 100-125. The large extent of grasslands, cliffs, inaccessibility and lack of disturbance is the major reason for the healthy number of nilgiri tahr in the sanctuary. Better monitoring & strict protection of the region together with controlled burning of grasslands before the onset of summer is essential for the long term survival of the species(Sharon,2010). Jayakumar Sharma P.K, Wildlife Warden observed a tiger kill at Valliyar during July 2011 which established the presence of Tiger in the sanctuary which was later confirmed by camera trap set up at Athirumala by Nixon, a member of WII during January 2012.

Among the 43 species of reptiles recorded, 23 species were snakes like python, king cobra, common cobra, common krait, Russell's viper, rat snake, pit vipers, green whip snake, Bibran's coral snake, common keel back, etc. Beside snakes, terrapins like Indian flap shell turtle, Travancore tortoise; geckos like house gecko, bark gecko, rock gecko, etc were also recorded. Indian monitor lizard, which breeds during October- January, is highly sought after by the tribals for meat and eggs. Some species of skinks and ichthyophis are used as fish bait by the tribals. Among other mammals fruit bats are also hunted for meat by the Kani tribes.

Of the 217 bird species recorded, important sightings include painted bush quail, Indian great backed wood pecker, three-toed king fisher, blue-eared king fisher, blue bearded bee eater, red-winged crested cuckoo, forest eagle owl, brown wood owl, grey- headed

fishing eagle, great-eared nightjar, Japanese buzzard, tiger bittern, hair crested drongo, Nilgiri wood pigeon, orange-breasted green pigeon, Nilgiri thrush, white-bellied short wing, black and orange flycatcher, Malabar shama, Indian cliff swallow, black-crested baza, eastern grasshopper warbler, white-bellied blue flycatcher, Kerala laughing thrush, South Travancore laughing thrush, etc.

13 species of amphibians were reported from the sanctuary. Species like common Indian toad, Indian bull frog, green pond frog, Jerdon's bull frog, Beddome's leaping frog, Indian tree frog, Malabar tree frog, *Ichthyophis* sp, etc were the common ones. In addition to this, the following species of fishes such as Tilapia, Catfish, Eel, Murrel, Organe Chromid etc are seen in the reservoir. During the period of 1990-2000, the Fisheries Department released species such as Catla, Rohu, Mrigal, Srasscarp, Silver Carp, etc into the reservoir.

# CHAPTER 3

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

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

After the construction of the Dam at Neyyar, the catchment area of the Reservoir was declared as a Wildlife Sanctuary in 1958 mainly for the protection of the catchment, and also for the purpose of conserving and developing the wildlife of the region and its habitat. In order to attain these objectives, Neyyar was declared as a Wildlife Sanctuary by the Government of Kerala notification no: 871/58/AD dated 06.08.1958. The boundaries were subsequently modified vide GO No.2305/F2/71/AD dated 18.03.1971 by adding Neyyar Reservoir area also as part of the Wildlife Sanctuary. The area was previously part of Thiruvananthapuram Forest Division up to 1982. On 12<sup>th</sup> August 1982, vide G.O(MS) No.242/82/AD, Neyyar sanctuary was made a separate unit and an Assistant Conservator of Forests in charge of Neyyar sanctuary was vested with charge of cheque drawing powers with separate letter of credit facilities. Thus a separate Wildlife Division was formed with Headquarters at Thiruvananthapuram for better and effective management of the Sanctuary. Neyyar with an extent of 128sq.km is one of the two Wildlife Sanctuaries under Thiruvananthapuram Wildlife Division, the other being Peppara Wildlife Sanctuary.

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

The First Management Plan for Neyyar Wildlife Sanctuary was from the period 1990-91 to 1999-2000. The boundaries of the Sanctuary were well demarcated during this plan. However, apart from this the First Plan was merely just a document of its own without any specific objectives to achieve. The plan didn't lay much emphasis on the specific requirements of the Sanctuary. The zonation of the sanctuary into tourism zone, buffer zone and core zone based on the significance and landscape features was not at all specified. Though the plan aimed at a well defined staff deployment for administering the Sanctuary, it wasn't implemented during this plan period. Moreover the plan looked upon

only very limited areas of protection like poaching, fire etc while other areas of conservational importance such as soil, water, vegetation, NTFP collection etc were ignored. The limited infrastructural facilities, equipments, materials, vehicles, lack of wildlife training to staff and together with shortage of staff hindered the effective protection and daily administration of the Sanctuary. The plan didn't indicate the people-PA mutual impact and as such no eco development initiatives were carried out during the plan. The facilities and requirements of visitor management, monitoring of Sanctuary components etc though were clearly indicated in the plan, were not implemented due to several factors. Further, no institutional arrangements were made to undertake research in the Sanctuary and as such the data prepared lacked scientific input and authenticity in areas related to flora, fauna, climate, hydrology, socio economics of the tribals etc.

The Second Management Plan was from the period 2002-03 to 2011-2012. The objectives of the plan were, Conservation of biodiversity, restoration of the degraded areas, maintaining and improving the watersheds of the Sanctuary, Promoting research for education and management of the Sanctuary, Promoting nature based regulated tourism, Promoting participatory EDC programmes, Resolving human-wildlife conflict, and Human resource management. During this plan period, many of the objectives were fulfilled to a great extent though not all the objectives were fulfilled successfully. The major achievements of the plan are:

- The Zonation of the Sanctuary into Core, Buffer and Tourism zones were achieved and the uncontrolled tourism activities were restricted to a large extent
- The Protection activities have been strengthened through regular patrolling and perambulation of sensitive areas using the available staff and protection watchers
- Field ration was supplied to the staff and watchers staying inside the forests. All the 3 Sections are having wireless sets and field staff are given walkie talkies which helped in passing quick information
- Boundary consolidation was done by constructing permanent cairns wherever the sanctuary shared its boundary with private lands.
- In order to reduce the human-wildlife conflict near the settlements, solar fencing, trenches and jungle stone walls were erected in few areas

- Participatory fire management was strengthened incorporating maximum members from EDC in fire protection activities. Reduction in the number of fire incidents is a direct success indicator of this programme
- Nature Camps were organized regularly for imparting awareness especially for school and college students
- .The extent of the Deer Rehabilitation Centre was increased to 8.6ha thereby creating more space for the animals to roam.
- The Agasthya Crocodile Research Centre was renovated and few of the captive Crocodiles were shifted to the newly created pond in their natural environment
- All Anti Poaching Camp Sheds were provided with solar house lighting
- Regular upkeep and maintenance of the Lion Safari Park was carried out
- Ecodevelopment committees were formed as envisaged in the plan and addressed the social and economic issues of people in and around PA
- New initiatives to EDC's, mainly income generating programmes were carried out thereby improving their socio economic profile and equipping the local tribal people and fringe dwellers for effective and better participation in the management of the sanctuary
- Agasthya nature study centre cum interpretation centre along with a medicinal garden was also established for nature education, training and awareness programmes
- For effective and quick communication facilities, all the field staff were provided with a post paid sim card having CUG(*common user group*) facilities
- A 25 seater boat was purchased for ecotourism purposes, a mini bus was procured for lion safari visit and 2 speed boat engines were purchased for improving protection activities in the sanctuary

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

#### **3.3.1 Timber Operations/Collection of Firewood & NWFP**

There are no timber operations in the sanctuary. However collection of firewood occurs in varying degree across the region and is a major problem within the Sanctuary. The practice is widespread due to the existence of tribal settlements within the Sanctuary and large number of people living on the fringes. The people of tribal settlements and locals

are regularly engaged in collection of NTFP's which are mainly used for sale outside the Sanctuary. The unscientific collection practices of NTFP's causes severe damage to the ecosystem. Moreover this practice is leading to the extinction of many locally endemic plants in the Sanctuary. However under the Budget head, National Medicinal Plant Board, a collection, processing, and marketing centre for NTFP species have been constructed at Kottoor which is nearing completion. By adequate training in scientific collection, proper marketing and providing people with other alternatives, this issue can be solved. The rough quantitative assessment of the NWFP stock is attached below.

**TABLE 8: DETAILS OF NWFP COLLECTION (Annual)**

| <b>Sl. No</b> | <b>Item</b> | <b>Section</b> | <b>Quantity(kg)</b> |
|---------------|-------------|----------------|---------------------|
| 1             | Tamarind    | Klamala I      | 1000                |
| 2             | Gooseberry  | Klamala I      | 1000                |
| 3             | Honey       | Klamala I      | 50                  |
| 4             | Goose berry | Klamala II     | 500                 |
| 5             | Vayanapoovu | Klamala II     | 100                 |
| 6             | Tamarind    | Klamala II     | 500                 |
| 7             | Turmeric    | Klamala II     | 500                 |
| 8             | Ponnampoovu | Klamala II     | 200                 |
| 9             | Honey       | Kottoor        | 400                 |
| 10            | Gooseberry  | Kottoor        | 1200                |
| 11            | Ponnampoovu | Kottoor        | 200                 |
| 12            | Vayanapoovu | Kottoor        | 100                 |
| 13            | Tamarind    | Kottoor        | 700                 |
| 14            | Shathavari  | Kottoor        | 100                 |
| 15            | Turmeric    | Kottoor        | 200                 |
| 16            | Pepper      | Kottoor        | 100                 |

### **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 tribal settlements and forest fringes. Incidents of poaching have been reported from the Sanctuary in the past. Poaching cases of Gaur, Elephant, Sambar Deer, Wild Boar, Nilgiri Tahr etc have been reported from areas such as Ananirathy, Varayattumudi, vVenkulam, and along the tribal settlements, forest fringes and the Kerala-TamilNadu border. The most sensitive area of the Sanctuary is the Varayattumdi region where the

sanctuary shares its boundary with the Kalakkad-Mundanthurai Tiger Reserve of TamilNadu. Lack of an anti poaching camp shed here seriously affects the protection of the area. It is reliably learnt poaching and smuggling gangs from TamilNadu are entering the Sanctuary through various entry points on the Tamilnadu region. As such frequency of patrolling is now increased with the establishment of permanent monitoring blocks and border patrolling. However, there is a need to provide further infrastructural support by constructing camp sheds at Thalamutty, Venkulam and vallyiar which can help in arresting the movement through the identified illegal entry points. There is also a need to persuade the people living in settlements to surrender the weapons with the help of EDC's. Encroachment is yet another problem faced near the tribal settlements of the Sanctuary. The kani tribes are basically agriculturalists practicing shifting cultivation in the past, but recently restricted in the settlements embarked for them.

**TABLE 9: DETAILS OF FOREST OFFENCES DURING 2002-2011**

| <b>Year</b>  | <b>KF Act</b> | <b>WLP Act</b> | <b>Total</b> |
|--------------|---------------|----------------|--------------|
| <b>2002</b>  | 5             | 7              | 12           |
| <b>2003</b>  | 2             | 3              | 5            |
| <b>2004</b>  | 5             | 7              | 12           |
| <b>2005</b>  | 10            | 3              | 13           |
| <b>2006</b>  | 14            | 4              | 18           |
| <b>2007</b>  | 10            | 0              | 10           |
| <b>2008</b>  | 4             | 1              | 5            |
| <b>2009</b>  | 5             | 2              | 7            |
| <b>2010</b>  | 2             | 1              | 3            |
| <b>2011</b>  | 0             | 0              | 0            |
| <b>Total</b> | <b>57</b>     | <b>28</b>      | <b>85</b>    |

### **3.4.2 Grazing**

Livestock grazing in the Sanctuary is a major headache for the authorities. People living on the fringe areas and tribal living inside keep a 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. Not much studies have been done to assess and quantify the impact of grazing on the ecosystem as a whole. However 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 through various other programmes, this problem is under control now. More effective steps in future needs to be initiated to tackle this menace 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, tribals, local people and pilgrims visiting Agasthyarkoodam 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 past. However, in recent times the concept of fire management with the involvement of EDC's has gained substantial importance and is showing positive results. Details of available fire report from the year 2007 to 2012 are given below.

**TABLE 10: DETAILS OF FIRE INCIDENTS**

| <b>Sl.no</b> | <b>Year</b> | <b>Section</b> | <b>Area</b>                                 | <b>Area burnt</b> |
|--------------|-------------|----------------|---|-------------------|
| 1            | 2007-08     | Klamala II     | Venkulam                                    | 10ha              |
|              |             | Klamala I      | Nil   | Nil               |
|              |             | Kottoor        | Nil   | Nil               |
| 2            | 2008-09     | Klamala II     | Bharathampullu, Mayamala,<br>Manamkandapara | 12.5ha            |
|              |             | Klamala I      | Mannappu, Noolmudi                          | Nil               |
|              |             | Kottoor        | Nil   | Nil               |
| 3            | 2009-10     | Klamala II     | Venkulam                                    | 1.5ha             |
|              |             | Klamala I      | Nil   | Nil               |
|              |             | Kottoor        | Nil   | Nil               |
| 4            | 2010-11     | Klamala II     | Theerthakara, Seethankarapara               | 10ha              |
|              |             | Klamala I      | Nil   | Nil               |

|   |         |            |                      |       |
|---|---------|------------|----------------------|-------|
|   |         | Kottoor    | Unnikadavu           | 5ha   |
| 5 | 2011-12 | Klamala II | Mayamala             | 1ha   |
|   |         | Klamala I  | Mannappu, Onamkaachi | 5.5ha |
|   |         | Kottoor    | 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. 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**

Neyyar Wildlife Sanctuary attracts a large number of visitors annually which includes the common public, students, researchers, scientists, nature lovers and environmentalists. The visitor flow to the Sanctuary is comparatively high due to the proximity to Thiruvananthapuram city. An interpretation centre with a ticket counter is functioning at Neyyar for providing information to the visitors. A Lion Safari Park, Deer Rehabilitation Centre and a Crocodile Park are the major tourist attractions along with boating which is permitted in the Reservoir under strict control. Brochures and pamphlets about the Sanctuary and its importance are given to the visitors as a part of awareness creation. An inspection bungalow with 2 rooms, a dormitory, a youth hostel having dormitory type accommodation for a group of 12 members is also available here. The nature education cum interpretation centre and the medicinal garden at Marakunnam is also being visited by students and nature lovers. The table shown below shows the details of visitors during the past 5 years.

**TABLE 11: DETAILS OF VISITORS DURING THE PAST 5 YEARS**

| <b>Year</b>    | <b>Total Visitors</b> |
|----------------|-----------------------|
| <b>2007-08</b> | 19170                 |
| <b>2008-09</b> | 20530                 |
| <b>2009-10</b> | 19048                 |
| <b>2010-11</b> | 20249                 |

**TABLE 12: DETAILS OF INCOME THROUGH ECOTOURISM ACTIVITIES**

| Sl.No | Year    | Income generated<br>(Rs in lakhs) |
|-------|---------|-----------------------------------|
| 1     | 2008-09 | 23.57                             |
| 2     | 2009-10 | 21.61                             |
| 3     | 2010-11 | 23.06                             |

The income generated through ecotourism activities after remitting the Government share is being utilized for the upkeep of animals, wages to EDC members, maintenance of vehicles, tourism related activities, 5% overhead charges to CEO's office etc. Annual plan of operation is prepared for every financial year for the utilization of RFPF and got approved in the general body meeting of FDA .

Nature 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, meditation etc. Accommodation and food@120/day/person is provided free of cost to the participants. Camps are conducted by Department officials though resource persons are invited occasionally.

**TABLE 13: DETAILS OF NATURE CAMPS CONDUCTED DURING LAST 5 YEARS**

| Sl.no | Target Groups           | 2007-<br>2008 | 2008-<br>2009 | 2009-<br>2010 | 2010-<br>2011 | 2011-<br>2012 |
|-------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| 1     | School/College students | 66            | 72            | 70            | 59            | 81            |
| 2     | NGO's/Nature clubs      | 5             | 5             | 5             | 8             | 2             |
| 3     | Others                  | 2             | 3             | 4             | 0             | 0             |
|       | <b>TOTAL</b>            | <b>73</b>     | <b>80</b>     | <b>79</b>     | <b>67</b>     | <b>83</b>     |

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

Very few research activities are conducted in the Sanctuary. 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. Elephant census were conducted during 2005, 2007 and 2010 and Tiger census in 2010.

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

#### **PROGRAMMES**

The Sanctuary is under the administrative control of Thiruvananthapuram Wildlife Division with Wildlife Warden as head of the Division. The Assistant Wildlife Warden administrates the day to day work of the Sanctuary and the office is located at Neyyar. The Sanctuary is divided into three sections, Kottoor, Klamala 1 and Klamala 2 and the Sections are administered by Foresters. Considering the various types of works such as attending nature camps, issuing entrance tickets to visitors and giving information, looking after livestock and attending for court duty, besides the normal duties of protection and supervision of Departmental works, the present strength of Protective Staff is inadequate. The department has provided all the field staff with a postpaid sim card, which enables them to make free unlimited calls within the CUG list of Department.

**TABLE 14: DETAILS OF DEPARTMENT TELEPHONE NUMBERS**

| <b>Sl.no</b> | <b>Officials</b>                   | <b>Number</b> |
|--------------|------------------------------------|---------------|
| 1            | Wildlife Warden's Office           | 0471-2360762  |
| 2            | Wildlife Warden                    | 9447979082    |
| 3            | Assistant Wildlife Warden's Office | 0471-2272182  |
| 4            | Assistant Wildlife Warden          | 8547602970    |
| 5            | Wildlife Assistant                 | 8547602971    |
| 5            | Forester, Headquarters             | 8547602972    |
| 6            | Forest Guard, Headquarters         | 8547602973    |
| 7            | Forest Guard, Headquarters         | 8547602974    |
| 8            | Forest Guard, Headquarters         | 8547602975    |
| 9            | Forest Guard, Headquarters         | 8547602976    |
| 10           | Forester, Headquarters             | 8547602977    |
| 11           | Forest Guard, Kottoor              | 8547602978    |
| 12           | Forest Guard, Kottoor              | 8547602979    |

|    |                                   |            |
|----|-----------------------------------|------------|
| 13 | Forest Guard, Kottoor             | 8547602980 |
| 14 | Section Forester, Kottoor         | 8547602981 |
| 15 | Section Forester, Klamala II      | 8547602982 |
| 16 | Forest Guard, Klamala II          | 8547602983 |
| 17 | Forest Guard, Klamala II          | 8547602984 |
| 18 | Forest Guard, Klamala II          | 8547602985 |
| 19 | Reserve Forest Watcher, Klamala I | 8547602986 |
| 20 | Forest Guard, Klamala I           | 8547602987 |
| 21 | Section Forester, Klamala I       | 8547602988 |
| 22 | Forest Guard, Klamala I           | 8547602989 |
| 23 | Information Centre                | 8547602955 |

**TABLE 15: CONTACT ADDRESS**

| Contact addresses   |  |
|---|--|
| <p>Wildlife Warden,<br/>Thiruvananthapuram Wildlife<br/>Division, Rajiv Gandhi Nagar,<br/>Vattiyoorkavu PO 695013,<br/>Thiruvananthapuram, Kerala<br/>PH: 0471-2360762<br/>Email:ww-trivandrum@forest.kerala.gov.in</p> | <p>Assistant Wildlife<br/>Warden Neyyar Wildlife<br/>Sanctuary Neyyar Dam<br/>PO. 695572<br/>Kattakkada,<br/>Thiruvananthapuram,<br/>Kerala<br/>PH: 0471-2272182</p> |

**TABLE 16: PRESENT STAFF POSITION OF WILDLIFE WARDEN'S OFFICE**

| Sl.No | Staff                 | Present Strength |
|-------|-----------------------|------------------|
| 1     | Wildlife Warden       | 1                |
| 2     | Junior Superintendent | 1                |
| 3     | Head Accountant       | 1                |
| 4     | U.D.Clerk             | 3                |
| 5     | L.D.Clerk             | 3                |

|    |                   |   |
|----|-------------------|---|
| 6  | Typist            | 1 |
| 7  | Peon              | 2 |
| 8  | Driver            | 1 |
| 9  | Part time sweeper | 1 |
| 10 | Attender          | 1 |

**TABLE 17: PRESENT STAFF POSITION OF ASST WILDLIFE WARDEN'S OFFICE**

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

### **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 18: DETAILS OF BUILDINGS**

| Sl.No. | Name of building                | GPS Readings                    | Type of buildings | Remarks        |
|--------|---------------------------------|---------------------------------|-------------------|----------------|
| 1      | Asst. Wildlife warden's office  | 8° 53' 425"<br>077° 14' 911"    | Type II duplex    |                |
| 2      | Asst. Wildlife warden's Quarter | 8° 53' 449"<br>077° 14' 880"    | Single            |                |
| 3      | Rest House, Meenmutty           | 08° 34, 403<br>077° 12' 756     | Single            |                |
| 4      | Forester Quarters, Neyyar       | 8° 53' 425"<br>077° 14' 911"    | Duplex            |                |
| 5      | Forester Quarters, Neyyar       | 8° 53' 425"<br>077° 14' 911"    | Single            |                |
| 6      | Rest House, Neyyar              | 8° 53' 446"<br>077° 14' 935"    | Single            |                |
| 7      | Boat landing                    | 8° 53' 504"<br>077° 14' 952"    | Single            |                |
| 8      | Guards Quarters                 | 8° 53' 449"<br>077° 14' 880"    | Duplex            |                |
| 9      | Guards Quarters                 | 8° 53' 449"<br>077° 14' 880"    | Single            |                |
| 10     | Youth Hostel                    | 8° 53' 495"<br>077° 14' 890"    | Single            |                |
| 11     | Information Centre, Neyyar      | 8° 53' 540"<br>077° 14' 958"    | Single            |                |
| 12     | Jeep Garage cum thondy shed     | 8° 53' 425"<br>077° 14' 911"    | Single            |                |
| 13     | Guards Quarters                 | 8° 53' 425"<br>077° 14' 911"    | Duplex            |                |
| 14     | Picket Station, Kappukadu       | 08° 55' 604<br>077° 15', 589    | Single            |                |
| 15     | Camp shed, Kottamanpuram        | 08° 32' 06.2<br>077° 10', 10.0  | Single            | Unfit for stay |
| 16     | Solar fence store, Thenmala     | 08° 32' 28.3"<br>077° 09', 22.4 | Single            | Unfit for stay |
| 17     | Forester Quarters, Karikkuzhy   | 08° 51', 483<br>077° 19', 391   | Single            |                |
| 18     | Guards Quarters, Karikkuzhy     | 08° 51', 464<br>077° 19', 396   | Single            |                |
| 19     | Guards Quarters, Karikkuzhy     | 08° 51', 468"<br>077° 19', 39.4 | Single            |                |
| 20     | Forester Quarters, Ananirathy   | 08° 49', 753"<br>077° 24' 026   | Single            |                |
| 21     | Wireless Station, Ananirathy    | 08° 49', 737"<br>077° 24' 04"   | Single            |                |
| 22     | Forester Quarter, DRC           | 08° 54', 981"<br>077° 44' 013"  | Single            |                |
| 23     | Dormitory, Kombai               | 08° 32' , 656                   | Single            |                |

|    |   |                                 |                |                |
|----|---|---------------------------------|----------------|----------------|
|    |   | 077° 11' 773                    |                |                |
| 24 | Foresters Quarters, Vellarada               | 08° 45' 221<br>077° 19' 556     | Single         |                |
| 25 | Bus shed, Neyyar                            | 8° 53' 451"<br>077° 15' 074"    | Single         |                |
| 26 | Antipoazhing shed, Utharamkayam (Bhoothaka) | 08° 33' 12.5"<br>077° 13' 34.9" | Single         | Unfit for stay |
| 27 | Community Hall, Vlavetty                    | 08° 54' 963"<br>077° 14' 025"   | Single         |                |
| 28 | Marakunnam Nature Study Centre              | 08° 54' 489"<br>077° 14' 026"   | Single         |                |
| 29 | Dormitory, Mukundara                        | 08° 52' 797"<br>077° 12' 764"   | Single         |                |
| 30 | Dormitory, Vellarada                        | 08° 45' 243 "<br>077° 19' 58.4  | Single         |                |
| 31 | Community Hall, Vellarada                   | 080 45' 236<br>0770 19' 553     | Single         |                |
| 32 | Picket Station, Vellarada                   | 080 45' 236<br>0770 19' 606     | Single         |                |
| 33 | IB, Vettimurichakone                        | 080 32' 53.00<br>0770 09' 22.4  | Type II duplex |                |
| 34 | IB, Kanchimoodu                             | 080 31' 52.00<br>0770 10' 25.00 | Type II duplex |                |
| 35 | Picket Station, Puravimala                  | No831489<br>E07710598           | Single         |                |
| 36 | Picket Station, Narayappu                   | No852829<br>E07722315           | Single         |                |
| 37 | Type II Theerthakara                        | 08035,11.0"<br>0770 13' 17.2    | Single         |                |
| 38 | Antipoaching camp-Thalamutty                | N0832' 18.2"<br>E077" 15; 34.8  | Single         |                |
| 39 | Check post building Chakkappara             | N080 50' 451<br>E0770 20' 406   | Single         |                |

**TABLE 19: DETAILS OF UNFINISHED BUILDINGS**

| Sl.No | Name of Building                                 | GPS Readings                   |
|-------|--|--------------------------------|
| 1     | Kanchimoodu                                      | N08* 31' 52"<br>E077* 10' 25"  |
| 2     | Vettimurichakone                                 | N08* 32' 53"<br>E077* 9' 22.4" |
| 3     | Forest Station Building<br>Karikkuzhi (Edavanam) | N080 52' 112<br>E0770 19' 119  |
| 4     | Forest station                                   |                                |
| 5     | Picket station, Vellarada                        |                                |
| 6     | Dormitory, Anappara<br>vellarada                 |                                |
| 7     | Community hall, Anappara                         |                                |

### 3.8.2 Roads

**TABLE 20: DETAILS OF EXISTING ROADS**

| Sl. No | Name                                   | Section    | Gps readings  | Kms |
|--------|--|------------|---|-----|
| 1      | Anamugham-Puravimala                   | Klamala I  | N08*50'058"<br>E077*20'576"<br><br>N08*52'449"<br>E077*19'482"  | 3   |
| 2      | Elamkam- Chakkapara                    | Klamala I  | N08*50'173"<br>E077*20'777"<br><br>N08*50'082"<br>E077*20'472"  | 5   |
| 3      | Puravimala kadath-kombai kadath        | Klamala II | N08*31'48.6"<br>E077*10'59.9"-<br>N08*32'38.9"<br>E077*11'33.6" | 2   |
| 4      | Karikuzhi-Shangumkonam-puravimala road | Klamala II | N08*31'34.5"<br>E077*11'37.1"-<br>N08*32'03.9"<br>E077*11'12.8" | 2   |
| 5      | Kappukadu –Meenmutty                   | Kottoor    | N08*55'608"<br>E077*15'592"-<br>N08*34'403"<br>E077*12'756"     | 14  |
| 6      | Njavaravalli –Kombai                   | Kottoor    | N08*33'504"<br>E077*12'074"-<br>N08*33'014"<br>E077*12'074"     | 2   |

### 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 21: DETAILS OF EXISTING TREK PATHS**

| Sl. No | Name                             | Section    | Gps readings  | Kms |
|--------|----------------------------------|------------|---|-----|
| 1      | Uttaramkayam-Pulivizhunthalchuna | Klamala II | N08*32'44.8"<br>E077*13'06.7"-<br>N08*34'42.1"<br>E077*14'14.6" | 5   |
| 2      | Neerazhipara-Chemmanamkunnu      | Klamala II | N08*32'39.6"<br>E077*13'08.2"-<br>N08*32'37.8"<br>E077*14'22.0" | 4   |
| 3      | Bhootaka-Ayanimoodappu           | Klamala II | N08*33'39.6"<br>E077*13'21.9"-<br>N08*33'00.2'                  | 4   |

|    |   |            |   |     |
|----|---|------------|---|-----|
|    |   |            | E077*13'21.9"   |     |
| 4  | Moongavila-Charupara                                | Klamala II | N08*34'55.8"<br>E077*13'19.8"<br>N08*34'16.4"<br>E077*12'.1"    | 6   |
| 5  | Theerthakara-<br>Pulivizhunthalchuna                | Klamala II | N08*35'07.4"<br>E077*13'19.2"<br>N08*34'40.4"<br>E077*14'24.5"  | 4   |
| 6  | Mullayar-Thalamutti                                 | Klamala II | N08*32'20.4"<br>E077*13'15.5"<br>N08*32'54.1"<br>E077*16'23.0"  | 8   |
| 7  | Valliyar-Thalamutti                                 | Klamala II | N08*32'16.4"<br>E077*13'17.0"<br>N08*31'59.0"<br>E077*16'6.7"   | 10  |
| 8  | Thalamutti-<br>Pulivizhunthalchuna                  | Klamala II | N08*32'54.1"<br>E077*16'23.0"<br>N08*34'40.4"<br>E077*14'24.5"  | 9   |
| 9  | Mullayattumukku-Valliyar                            | Klamala II | N08*32'20.1"<br>E077*13'08.4"<br>N08*32'52.3"<br>E077*13'24.5"  | 2.5 |
| 10 | Mullayattumukku-Thenmala-<br>Kannumamoodu           | Klamala II | N08*32'20.1"<br>E077*13'08.4"<br>N08*31'52.2"<br>E077*13'24.5"  | 3   |
| 11 | Valliyar-Nellimoodupalara                           | Klamala II | N08*31'38.9"<br>E077*13'38.9"<br>N08*50'856"<br>E077*26'55"     | 5   |
| 12 | Theerthakara-Sheethangapara-<br>pulivizhunthalchuna | Klamala II | N08*39'10.0"<br>E077*13'17.2"<br>N08*34'41.1"<br>E077*14'20.02" | 5   |
| 13 | Narayappu-<br>Sooryanthanakuzhi                     | Klamala II | N08*32'51.4"<br>E077*15'09.3"                                   | 3   |
| 14 | Arumala-plath                                       | Kottoor    | N08*343'504<br>E077*11'976"<br>N08*34'546"<br>E 77*13'007"      | 3   |
| 15 | D.R.C-Vazhamulakone                                 | Kottoor    | N08*54'726"<br>E077*14'180-<br>N08*54'726"<br>E077*15'668"      | 7   |
| 16 | Plath-Meenmutty                                     | Kottoor    | N08*34'548"<br>E077*13'009-<br>N08*34'403"<br>E077*12'756       | 2.5 |
| 17 | Komba -Utharam<br>Kayam -Meenmutty                  | Kottoor    | N08*32'657"<br>E077*11'774"<br>N08*34'401"<br>E077*12'753"      | 8.5 |

|    |                                 |         |   |     |
|----|---------------------------------|---------|---|-----|
| 18 | Kathirumudi-Kadakampetty        | Kottoor | N08*33'463''<br>E077*10'127''-<br>N08*33'389''<br>E077*10'205'' | 4   |
| 19 | Cherupunnathodu-<br>Kathirumudi | Kottoor | N08*33'375''<br>E077*09'568''-<br>N08*33'463''<br>E077*10'127'' | 3.5 |

### **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**
- **Illegal felling of trees & small timber, collection of firewood**
- **Pressure of tourism & illegal entry of tourists**
- **Human Wildlife Conflict**
- **Grazing**

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, tribals and local people 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 22: DETAILS OF EXISTING FIRE LINES**

| SI No | Name  | Section    | Gps readings  | Kms  |
|-------|---|------------|---|------|
| 1     | Valliyar                                      | Klamala I  | N08*50'965"<br>E077*26'581"<br>N08*50'070"<br>E077*20'485"    | 8.5  |
| 2     | Anamugham -<br>Ottakalmedu                    | Klamala I  | N08*50'070"<br>E077*20'485"<br>N08*50'965"<br>E077*26'581"    | 8.5  |
| 3     | Moopanappu fruits<br>bearing plantation       | Klamala I  | N08*50'800"<br>E077*25'561"<br>N08*50'478"<br>E077*25'063"    | 2.3  |
| 4     | Onam kachi bamboo<br>pltn                     | Klamala I  | N08*31'188"<br>E077*12'50.7"<br>N08*31'18.5"<br>E077*12'24.2" | 3    |
| 5     | Olakkayandi fruits<br>bearinn pln             | Klamala I  | N08*30'841"<br>E077*14'184"<br>N08*31'418"<br>E077*13'620"    | 2.2. |
| 6     | Kariyotta plan valliyar                       | Klamala I  | N08*31'413"<br>E077*13'575"<br>N08*31'541"<br>E077*13'585"    | 4    |
| 7     | Bamboo plan Manappu                           | Klamala I  | N08*30'46"<br>E077*13'829"<br>N08*30'546"<br>E077*13'630"     | 3    |
| 8     | In and around<br>Ananirathi-<br>Chokkan chadi | Klamala I  | N08*29'857"<br>E077*14'436"<br>N08*30'413"<br>E077*14'773"    | 5    |
| 9     | In and around Onam<br>kachi -Ananirathi       | Klamala I  | N08*29'56.2"<br>E077*14'202"<br>N08*31'197"<br>E077*12'42"    | 5    |
| 10    | Chettanolichacone                             | Klamala II | N08*32'29.6"<br>E077*13'22.9"                                 | 6    |
| 11    | Sooryanthanakuzhi                             | Klamala II | N08*31'55.4"<br>E077*14'12.9"                                 | 5    |
| 12    | Bhoothaka                                     | Klamala II | N08*32'39.6"<br>E077*13'08.2"                                 | 5    |
| 13    | Kaduvappara                                   | Klamala II | N08*32'04.8"<br>E077*13'36.1"                                 | 6    |
| 14    | Narayappu                                     | Klamala II | N08*53'01.7"<br>E077*18'8.2"                                  | 5    |
| 15    | Velamchathi                                   | Klamala II | N08*53'39.6"<br>E077*21'24.8"                                 | 6    |

|    |                           |            |   |    |
|----|---------------------------|------------|---|----|
| 16 | Mailady                   | Klamala II | N08*32'58.8"<br>E077*12'52.9"                               | 5  |
| 17 | Nellimoodupara            | Klamala II | N08*32'58.8"<br>E077*12'52.9"                               | 5  |
| 18 | Nellimoodupara            | Klamala II | N08*50'885"<br>E077*26'55"                                  | 5  |
| 19 | Bhoothaka                 | Klamala II | N08*33'00.0<br>E077*13'21.9"                                | 5  |
| 20 | Shangumkonam              | Klamala II | N08*31'53.5"<br>E077*11'55.6"                               | 5  |
| 21 | Kappukadu-Meenmutty       | Kottoor    | N08*55'608"<br>E077*15'593-<br>N08*34'403"<br>E077*12'756"  | 14 |
| 22 | Marakunnam-<br>Kappukkadu | Kottoor    | N08*54'278"<br>E077*14'108"-<br>N08*54'941"<br>E077*15'552" | 5  |
| 23 | Cherupunna-<br>Vellaikone | Kottoor    | N08*33'309"<br>E077*09'546"-<br>N08*33'116"<br>E077*10'060" | 5  |

**(ii) Exotic and invasive weeds:** Exotic weeds such as, *Mikania micrantha* and “*Kalapayar*” (*Pueraria phaseoloides*) were 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 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. The areas where removal of weeds need to be done are shown in the table.

**(iii) Poaching & fishing in the reservoir:** Poaching cases are rare in Neyyar wildlife sanctuary. However, in the past poaching of gaur, sambar deer, wild boar, elephant, nilgiri tahr etc have been reported from Varayattumudi, Venkulam, Ananirathy, the

border areas adjoining Tamilnadu and along the fringe areas of tribal settlements inside the sanctuary. Organized poaching gangs from Tamilnadu used to enter through the illegal entry points. Though poaching has been reduced to certain extent, the chances of it still happening cannot be ruled out completely. Fishing, especially in the interior part of the reservoir is done by tribals. Frequency of patrolling and overnight camping in vulnerable areas have to be done on a much regular basis. Along with strict enforcement of law, awareness may be created among the local communities to effectively tackle issues such as illegal fishing and their selling, if any, in outside market.

**(iv) Illegal felling of trees & small timber, collection of firewood:** 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. Regular patrolling and perambulation are being done to check these illegal activities. Collection of firewood and other NTFP's occur in various degrees across the sanctuary.

**(v) Pressure of tourism & their illegal entry:** There is a high influx of tourists into the sanctuary on holidays and during festival seasons. There is not much damage to the ecosystem due to the impact of tourism as of now since it is regulated by limiting the ecotourism package, there by allowing a maximum of 140 persons/day into the ecotourism zone of the sanctuary. Illegal entries of such people are also observed from certain places wherein checking stations are activated to curb illegal entries. More effective border patrolling shall resolve this issue.

**(vi) Human-wildlife conflict:** Attack by wild animals have increased considerably during the plan period. Crocodiles in the reservoir are a major concern to the dwellers residing in the bank of the reservoir. Incidents of attack by elephants, bear and gaur are also reported. Death due to crocodile attack is shown in the table.

**TABLE 23: DEATH DUE TO CROCODILE ATTACK**

| <b>Sl. No</b> | <b>Place where attacked</b>   | <b>Male/female</b> | <b>Year</b> |
|---------------|-------------------------------|--------------------|-------------|
| 1             | Part of kanchimmodu reservoir | Female             | 2001        |
| 2             | Near to puttukallu            | Male               | 2001        |

**TABLE 24: DETAILS OF COMPENSATION**

| <b>Sl. No</b> | <b>Year</b>  | <b>Relief to Victim(Rs)</b> | <b>Crop Damage(Rs)</b> |
|---------------|--------------|-----------------------------|------------------------|
| 1             | 2007-08      | Nil                         | 12000                  |
| 2             | 2008-09      | Nil                         | 9430                   |
| 3             | 2009-10      | Nil                         | 19200                  |
| 4             | 2010-11      | Nil                         | Nil                    |
| 5             | 2011-12      | Nil                         | 24800                  |
|               | <b>TOTAL</b> | <b>0</b>                    | <b>65430</b>           |

**(vii) Grazing:** The existence of cattle in and around the PA is a potential threat for outbreak of diseases like foot & mouth, anthrax, etc. Cattle have been seen grazing in the sanctuary, especially near the sanctuary boundaries near human habitation. Vaccination programme against such disease is conducted with the cooperation of the veterinary department.

# CHAPTER 4

## PEOPLE-PA INTERFACE SITUATION

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

A detailed socio economic survey of the tribals inside the sanctuary has been conducted.(See overleaf) There are 18 tribal settlements inside the sanctuary namely:

- Ayyavilakam
- Chakkappara
- Kaippamplavila
- Kallukadu
- Kunnathumala
- Sankinkonam
- Karikuzhai
- Puravimala
- Kannammamoodu
- Thenmala
- Vlavetty
- Kombai
- Ayiramkal
- Pathayamvachappu
- Mele Amala
- Thazhe Amala
- Plathu
- Anakal.

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

22 EDC's function in the Sanctuary of which 15 are active EDC's participating in Forest Department activities. In the Stakeholders' meeting on 8/6/2011, the representatives of the EDC's demanded the abolition of non functional EDC's. 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. The Neyyar Ecotourism Development Committee (NET) 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 Lion Safari Park, Crocodile Park etc. The ecodevelopment surcharge levied from the tourists go to the welfare fund of EDC's 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 25: LIST OF FUNCTIONAL & NON FUNCTIONAL EDC'S**

| <b>Functional</b> |                    | <b>Non Functional</b> |                    |
|-------------------|--------------------|-----------------------|--------------------|
| <b>Sl. No.</b>    | <b>Name of EDC</b> | <b>Sl. No.</b>        | <b>Name of EDC</b> |
| 1                 | Puttukallu         | 1                     | Chemboor           |
| 2                 | Puravimala         | 2                     | Karimamkulam       |
| 3                 | Mayam              | 3                     | Anakal             |
| 4                 | Thenmala           | 4                     | Villuchari         |
| 5                 | Kanjimoodu         | 5                     | Parathi            |
| 6                 | Koliyakode         | 6                     | Kunnathumala       |
| 7                 | Marakunnam         | 7                     | Ayyavilakam        |
| 8                 | Vlavetty –I        |                       |                    |
| 9                 | Vlavetty – II      |                       |                    |
| 10                | Amala              |                       |                    |
| 11                | Karikuzhi          |                       |                    |
| 12                | Chakkapara         |                       |                    |
| 13                | Thunduchira        |                       |                    |
| 14                | NET                |                       |                    |
| 15                | Kombai             |                       |                    |

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

To reduce the impact on forest and to promote the socio-economic situation of the people in and out of the Sanctuary, the following activities were carried out through NAP, Ecodevelopment, Integrated development of wildlife habitats and other State and Central schemes.

**TABLE 26: DETAILS OF DEVELOPMENTAL ACTIVITIES UNDER NAP, ECODEVELOPMENT, INTEGRATED DEVELOPMENT OF WILDLIFE HABITATS & OTHER PLAN FUNDS DURING THE PREVIOUS PLAN PERIOD**

| <b>Sl.no</b> | <b>EDC</b> | <b>Total Members</b> | <b>Tribal/ Non Tribal</b> | <b>Entry Point Activities</b>   |
|--------------|------------|----------------------|---------------------------|---|
| 1            | Puravimala | 319                  | Tribal                    | Book binding unit, Driving practice, stitching practice, apiculture practice, distribution of study materials, distribution of agriculture implements, loan towards self employment, supplied Television to TV keoske, arranged medical camps, distribution of coconut seedlings and pepper seedlings, assistance to Neyyar Eco-Tourism.. |
| 2            | Thenmala   | 139                  | Tribal                    | Driving practice, Stitching practice, Apiculture practice, loan to self employment, distribution of study materials, Constructed TV Keoske and supplied Television, Conducted medical camps, distributed Coconut seedlings and pepper seedling, Provided one employee to NET EDC  |
| 3            | Puttukallu | 421                  | Non Tribal                | Loan towards self employment, Driving practice, Apiculture practice, Established Eco- food and spices unit at Mayam, Provided employment to 2 EDC members.  |

|    |              |     |            |   |
|----|--------------|-----|------------|---|
| 4  | Mayam        | 421 | Non Tribal | Loan towards self employment, Driving practice, stitching practice, Apiculture practice, Distributed study materials  |
| 5  | Kanjimoodu   | 162 | Non Tribal | Loan towards self employment, Driving practice, stitching practice, Apiculture practice, supplied poultry, provided employment to 1 person through NET EDC  |
| 6  | Karimankulam | 168 | Non Tribal | Loan towards self employment, Driving practice, stitching practice, Sweing machine supplied, Apiculture practice, supplied poultry, provided employment to 1 person through NET EDC, Implemented Drinking water project |
| 7  | Chemboor     | 375 | Non Tribal | Loan towards self employment, Driving practice, stitching practice, Apiculture practice, supplied sports and games equipments, Provided employment to 1 person through NET EDC  |
| 8  | Koliyakode   | 315 | Non Tribal | Loan towards self employment, Driving practice, stitching practice, Apiculture practice, Provided 8 employment to NET EDC, Drinking water project under progress  |
| 9  | Thonduchira  | 263 | Non Tribal | Supplied rubber roller machine, supplied bags, umbrells to students, loan towards self employment   |
| 10 | Chakkapara   | 293 | Tribal     | Book binding unit, conducted medical camps, loan for self employment, supplied computer to computer education   |
| 11 | Kunnathumala | 169 | Tribal     | loan towards self employment, constructed TV Keoske and supplied tele vision  |

|    |             |     |            |   |
|----|-------------|-----|------------|---|
| 12 | Parathi     | -   | Non Tribal | loan towards self employment  |
| 13 | Karikuzhi   | -   | Non Tribal | loan towards self employment  |
| 14 | Ayyavilakom | -   | Non Tribal | loan towards self employment  |
| 15 | Kombai      | -   | Tribal     | loan towards self employment,<br>Driving practice, Constructed<br>Chappathu in Njavaravally Thodu,<br>Constructed compound wall in<br>Vlavetty Tribal LP school                               |
| 16 | Amala       | -   | Tribal     | Loan towards self employment,<br>Driving practice   |
| 17 | Anakal      | -   | Tribal     | Loan towards self employment  |
| 18 | Vlavetty-I  | -   | Tribal     | loan towards self employment, Book<br>binding unit, Driving practice, supplied<br>sewing machine, Conducted medical<br>camps  |
| 19 | Vlavetty-II | -   | Tribal     | loan towards self employment,<br>supplied computer to Vlavetty Tribal<br>LPS, supplied books for Library in<br>Vlavetty Tribal school   |
| 20 | Villuchari  | -   | Non Tribal | loan towards self employment  |
| 21 | Marakunnam  | 180 | Non Tribal | loan towards self employment,<br>supplied sports and games equipments,<br>provided Gas connection for 10<br>families, providing food for nature<br>education camp, conducted medical<br>camps |
| 22 | NET EDC     | 15  | Non Tribal | Promoted Eco-tourism activities in<br>Neyyar Sanctuary and 15 members are<br>engaged in these activities.   |

**TABLE 27: DETAILS OF SOLAR FENCING**

| <b>Sl. No</b> | <b>Location</b>                 | <b>Section</b> | <b>Distance<br/>(km)</b> | <b>Gps reading</b>            |
|---------------|---------------------------------|----------------|--------------------------|-------------------------------|
| 1             | Around Puravimala<br>settlement | KlamalaII      | 5                        | N08*31'51.6"<br>E077*11'01.7" |
| 2             | Kombai                          | Kottoor        | 5                        | N08*33'002"<br>E077*12'070"   |
| 3             | Vlavetty                        | Kottoor        | 1.5                      | N08*55'013"                   |

|  |  |  |  |              |
|--|--|--|--|--------------|
|  |  |  |  | E077*14'240" |
|--|--|--|--|--------------|

The solar fencing systems fail to work in the long run as there is little care after installed.

**TABLE 26: DETAILS OF TRENCHES**

| Sl. No | Name                        | Section    | Gps readings  | Length(mts) |
|--------|-----------------------------|------------|---|-------------|
| 1      | Ananirathy                  | Klamala I  | N08*49'749"<br>E077*24'026"   | 110         |
| 2      | Valliyar                    | Klamala I  | N08*32'523"<br>E077*13'245"   | 86          |
| 3      | Part of Thenmala settlement | Klamala II | N08*32'15.3"<br>E077*12'09.6"<br>-<br>N08*32'17.4"<br>E077*12'07.3" | 80          |
| 4      | Theerthakkara               | Kottoor    | N08*34'873"<br>E077*13'410"   |             |
| 5      | Kappukadu                   | Kottoor    | N08*55'557"<br>E077*15'893"   |             |
| 6      | Kombai                      | Kottoor    | N08*32'664"<br>E077*11'778"   |             |

**TABLE 27: DETAILS OF KAYYALAS**

| Sl. No | Name  | Section    | Gps readings  | Length(km) |
|--------|---|------------|---|------------|
| 1      | Shangukonam settlement boundary-<br>Kunnathumala kannammamooode settlement-<br>thenmala trench area | Klamala II | N08*31'44.9"<br>E077*11'34.3"<br>-<br>N08*32'17.4"<br>E077*12'07.3" | 2.5        |
| 2      | Kanchimmodu   | Klamala II | N08*32'01.0"<br>E077*09'44.9"<br>-<br>N08*32'00.2"<br>E077*09'43.6" | 35         |
| 3      | Vlavetty  | Kottoor    | N 8*32'55.8"<br>E 77*8'45.8"  | 1.5        |

#### **4.4 PAST ECODEVELOPMENT INITIATIVES & THEIR IMPACT**

A formal eco development programme is yet to start functioning in a proper manner in the Sanctuary. The major field of involvement of the EDC's as far as Neyyar 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 functional EDC's.

(ii) **Ecotourism Activities:** The Neyyar Ecotourism Development Committee (NET) is assisting in conducting the Ecotourism packages in the Sanctuary. However this Committee is merely surviving without much significant achievements in their functioning. The fringe EDC namely KET EDC (Kottoor Eco Tourism) functioning in the ABP Range is assisting the ecotourism package in elephant rehabilitation centre and generating reasonable income out of ecotourism activities. The income generated from the tourism activities should be sufficient enough to meet the expenses of persons engaged by EDC's and also to meet the food expenses animals and for the smooth functioning of the Lion Safari Park, Deer Rehabilitation Centre, Crocodile Park, which is not being achieved presently. This needs to be resolved. More infrastructural facilities are needed for the Ecotourism activities. Two more passenger boats, one more additional Safari bus etc can be procured to conduct more boating and safari trips daily. An Ecotourism plan shall be prepared by the Wildlife Warden and shall regulate these activities effectively without damaging the environment. The eco development surcharges being collected now are utilized for sanctuary management and improving tourism facilities

(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.

**TABLE 28: ECODEVELOPMENT ACTIVITIES DURING  
THE PREVIOUS PLAN PERIOD**

| <b>Sl.no</b> | <b>EDC</b> | <b>Total Members</b> | <b>Tribal/<br/>Non Tribal</b> | <b>NAP Treatment Area</b>   | <b>Fire Protection Activities</b>   |
|--------------|------------|----------------------|-------------------------------|---|---|
| 1            | Puravimala | 319                  | Tribal                        | 2006-07 ANR<br>Kurathiup 18ha.<br>2006-07 Maniyankal-<br>Bamboo 18ha.<br>2009-10<br>Pattuparakone<br>Bamboo 10ha.   | Cleared fire lines & appointed fire watchers, conducted awareness camps during the fire season against fire |
| 2            | Thenmala   | 139                  | Tribal                        | 2006-07<br>Melekurathiappu-<br>15.84 ha.<br>2006-07<br>Melemaniyankal-<br>ANR-15.64ha.<br>2007-08<br>Vengamoodu-ANR -<br>20.96ha.<br>2009-10<br>Neyyattumukku -<br>Bamboo Plantation -<br>9.14ha. | Cleared fire lines & appointed fire watchers, conducted awareness camps during the fire season against fire |
| 3            | Puttukallu | 421                  | Non Tribal                    | 2006-07<br>Aruvippuram MHS -<br>30.08ha.<br>2007-08 Kukkiripara<br>ANR -20ha.<br>2009-10<br>Neyyattumukku-<br>Bamboo -9.44ha  | Cleared fire lines & appointed fire watchers, conducted awareness camps during the fire season against fire |

|    |              |     |            |   |   |
|----|--------------|-----|------------|---|---|
| 4  | Mayam        | 421 | Non Tribal | 2006-07<br>Kottamanpuram<br>MHS – 20ha.<br>2007-08 Mayamala -<br>Bamboo - 19.84ha.<br>2009-10 Thenmala -<br>Bamboo- 5ha.  | Cleared fire lines &<br>appointed fire<br>watchers,<br>conducted<br>awareness camps<br>during the fire<br>season against fire |
| 5  | Kanjimoodu   | 162 | Non Tribal | Nil   | Conducted<br>awareness camps<br>during the fire<br>season against fire  |
| 6  | Karimankulam | 168 | Non Tribal | Nil   | Nil   |
| 7  | Chemboor     | 375 | Non Tribal | Nil   | Nil   |
| 8  | Koliyakode   | 315 | Non Tribal | Nil   | Nil   |
| 9  | Thonduchira  | 263 | Non Tribal | Nil   | Nil   |
| 10 | Chakkapara   | 293 | Tribal     | 2006-07 Bamboo –<br>Chenampara 12.6ha.<br>2006-07 Bamboo<br>Arracku - 15.36ha.<br>2007-08 Bamboo –<br>Kozhikavu 40ha.<br>2008-09 Bamboo –<br>Chenampara<br>2008-09 Cane –<br>Arrack | Cleared fire lines &<br>appointed fire<br>watchers,<br>conducted<br>awareness camps<br>during the fire<br>season against fire |
| 11 | Kunnathumala | 169 | Tribal     | Nil   | Cleared fire lines &<br>appointed fire<br>watchers,<br>conducted<br>awareness camps<br>during the fire<br>season against fire |
| 12 | Parathi      | -   | Non Tribal | Nil   | Appointed fire<br>watchers,<br>conducted<br>awareness camps<br>during the fire  |

|    |             |   |            |   |   |
|----|-------------|---|------------|---|---|
|    |             |   |            |   | season against fire   |
| 13 | Karikuzhi   | - | Non Tribal | Nil   | Appointed fire watchers, conducted awareness camps during the fire season against fire                      |
| 14 | Ayyavilakom | - | Non Tribal | Nil   | Nil   |
| 15 | Kombai      | - | Tribal     | 2006 Bamboo – Utharamkayam 36.6ha.<br>2006 MFP - Njavaravally - 36.64ha.<br>2007 ANR Valavetty 24.72ha.<br>2007 Bamboo Valavetty 20.06ha. | Cleared fire lines & appointed fire watchers, conducted awareness camps during the fire season against fire |
| 16 | Amala       | - | Tribal     | 2006 Bamboo - Meenmutty 36.48ha.  | Cleared fire lines & appointed fire watchers, conducted awareness camps during the fire season against fire |
| 17 | Anakal      | - | Tribal     | Nil   | appointed fire watchers, conducted awareness camps during the fire season against fire                      |
| 18 | Vlavetty-I  | - | Tribal     | Nil   | appointed fire watchers, conducted awareness camps during the fire season against fire                      |

|    |             |     |            |     |   |
|----|-------------|-----|------------|-----|---|
| 19 | Vlavetty-II | -   | Tribal     | Nil | appointed fire watchers, conducted awareness camps during the fire season against fire                      |
| 20 | Villuchari  | -   | Non Tribal | Nil | appointed fire watchers, conducted awareness camps during the fire season against fire                      |
| 21 | Marakunnam  | 180 | Non Tribal | Nil | Cleared fire lines & appointed fire watchers, conducted awareness camps during the fire season against fire |
| 22 | NET EDC     | 15  | Non Tribal | Nil | Nil   |

\*All the fire prone areas treated under NAP are fire protected every year according to availability of fund

**TABLE 29:IMPLEMENTATION OF RECOGNITION OF FOREST RIGHTS ACT, 2006**

| Sl.No | Settlement    | Total No. of Claims | No.of families for which settlement rights are issued | No.of claims in which survey work is completed | Pending in district level committee | Remarks             |
|-------|---------------|---------------------|---|--|-------------------------------------|---------------------|
| 1     | Puravimala    | 59                  | 44  | 59   | 15                                  |                     |
| 2     | Thenmala      | 32                  | 31  | 32   | Nil                                 | 1 family absconding |
| 3     | Kannammamoodu | 11                  | 6   | 11   | 5                                   |                     |
| 4     | Sankinkonam   | 20                  | 5   | 20   | 15                                  |                     |

|    |                   |     |     |     |     |                    |
|----|-------------------|-----|-----|-----|-----|--------------------|
| 5  | Chakkappara       | 61  | Nil | 61  | 61  |                    |
| 6  | Kaippamplavila    | 16  | Nil | 16  | 16  |                    |
| 7  | Ayavilakom        | 17  | 9   | 17  | 8   |                    |
| 8  | Karikuzhy         | 27  | 16  | 27  | 11  |                    |
| 9  | Kunnathumala      | 23  | 19  | 23  | 4   |                    |
| 10 | Kallukadu         | 6   | 6   | 6   | Nil |                    |
| 11 | Kombai            | 6   | 6   | 6   | Nil |                    |
| 12 | Vlavetty          | 98  | 79  | 95  | 9   | Dispute in 3 cases |
| 13 | Amala             | 16  | Nil | Nil | Nil | Survey in progress |
| 14 | Ayiramkal         | Nil | Nil | Nil | Nil |                    |
| 15 | Plath             | Nil | Nil | Nil | Nil |                    |
| 16 | Anakal            | Nil | Nil | Nil | Nil |                    |
| 17 | Pathayamvacha app | 1   | Nil | Nil | Nil |                    |

**TABLE 30: DETAILS OF DIVERSION OF FOREST LAND UNDER RECOGNITION OF FOREST RIGHTS ACT, 2006**

| <b>SL.No</b> | <b>Year</b> | <b>Area of forest land diverted</b> | <b>No.of trees felled</b> | <b>Purpose of Diversion</b>    |
|--------------|-------------|-------------------------------------|---------------------------|--------------------------------|
| 1            | 2009        | 0.03ha                              | Nil                       | Foot bridge at Pantha plamoodu |

# CHAPTER 5

## VISION, OBJECTIVES, ISSUES & PROBLEMS

### 5.1 THE VISION

In the Stakeholders workshop on preparation of Management Plan for Neyyar Wildlife Sanctuary held on 8/6/2011, the vision statement was drafted. It reads as follows:

*“To reduce the people dependency on the Sanctuary, thereby conserving the biological diversity of Neyyar Wildlife Sanctuary for future generations, and also to develop the Sanctuary as an alternative home of the Nilgiri Tahr in Kerala after Eravikulam National Park”.*

### 5.2 OBJECTIVES OF MANAGEMENT

- To protect and conserve the ecological integrity and the rich biodiversity of the Sanctuary with special emphasis on Nilgiri Tahr and its habitat
- To manage the grasslands and other degraded forests
- To protect the catchment of Neyyar Reservoir
- To strengthen People-PA interface through revamping the EDC’s and to reduce the people dependency on the Sanctuary
- 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 conducted on 8/6/2011 are as follows:

**TABLE 31: SUMMARY OF STAKEHOLDER’S WORKSHOP**

| <b>Sl.no</b> | <b>Constraints</b>   | <b>Strategies</b>  |
|--------------|--|--|
|              | <b>1)To protect and conserve the ecological integrity and the rich biodiversity of the sanctuary with special emphasis on Nilgiri Tahr and its habitat</b> |  |
|              | 1) Inadequate information on rare, endangered, threatened and endemic  | ▪ Review the available literature and compile information, |

|  |   |   |
|--|---|---|
|  | species   | <p>including population estimation of Key species</p> <ul style="list-style-type: none"> <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 equipments etc)</li> <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 (Mikania, Pueraria phaseoloides (kalapayar)) | <ul style="list-style-type: none"> <li>▪ Identify and prioritize weed infested area,</li> <li>▪ timely removal through</li> </ul>   |

|  |  |   |
|--|--|---|
|  |  | <p>appropriate method (uprootal, cutting, based on participatory site specific plan)</p> <ul style="list-style-type: none"> <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 settlement & 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) Encroachment                                  | <ul style="list-style-type: none"> <li>▪ Demarcate the settlement boundary</li> <li>▪ Settle the rights of local tribal community</li> </ul>  |
|  | 9) 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 sheds: Thalamutty, Valliyar, Venkulam.</li> <li>▪ Vehicles: Existing Jeep 1, bike 1</li> <li>▪ Proposed Jeep 2 bike 1</li> <li>▪ Arms: Revolver 1, Rifle 4<br/>Proposed: same</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> |
|  | 10) 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 providing LPG connection, biogas, fuel efficient choolahs etc</li> </ul>  |
|  | 11) Non settlement of Rights                     | <ul style="list-style-type: none"> <li>▪ Facilitate settlement of rights</li> </ul>   |

|   |   |   |
|---|---|---|
|   |   | of tribes   |
|   | 12) 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>   |
|   | 13) Use of insecticides/pesticides in the cultivated area within the PA                   | <ul style="list-style-type: none"> <li>▪ Awareness creation</li> <li>▪ Encourage organic farming and marketing through EDC's</li> </ul>   |
|   | 14) 18 settlements in the PA  | <ul style="list-style-type: none"> <li>▪ Facilitate settlement of rights</li> <li>▪ Identify the incompatible activities and address through PFM</li> <li>▪ Active EDC's shall be reconstituted by modifying the micro plans and non functional EDC's shall be dismissed</li> </ul> |
|   | 15) Accumulation of non degradable pollutants   | <ul style="list-style-type: none"> <li>▪ Awareness creation</li> <li>▪ Enforcement of legal provisions</li> </ul>   |
|   | 16) Inadequate staff strength   | <ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>   |
|   | 17) 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 Manage the Grasslands and other Degraded Forests</b> |   |   |
|   | 1) Habitat management to suit Nilgiri Tahr  | <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>3) To Protect the Catchment of Neyyar Reservoir</b>        |   |   |

|   |   |   |
|---|---|---|
|   | 1) Soil erosion;  | <ul style="list-style-type: none"> <li>▪ Identity 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 landuse in private land adjoining PA  | <ul style="list-style-type: none"> <li>▪ Awareness creation</li> </ul>  |
| <b>4) To Strengthen People-PA interface</b>   |   |   |
|   | 1) 18 settlements in the PA   | <ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>   |
|   | 2) Non settlement of rights   | <ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>   |
|   | 3) Man wildlife conflict (wild boar, elephant, monkeys, Gaur)<br><br>Crops- Tapioca, pineapple, cococnut, pepper, arecanut, plantain.<br>Domestic animals-goat, poultry, rabbit | <ul style="list-style-type: none"> <li>▪ Errect 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 compensation</li> </ul> |
|   | 4) Inadequate linkages with line departments  | <ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>   |
|   | 5) Sanitary facilities-inadequate   | <ul style="list-style-type: none"> <li>▪ Address through FDA</li> </ul>   |
|   | 6) Lack of drinking water facilities  | <ul style="list-style-type: none"> <li>▪ Address through FDA</li> </ul>   |
|   | 7) Delay in payment of compensation   | <ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>   |
|   | 8) Lack of alternate livelihood options   | <ul style="list-style-type: none"> <li>▪ Address through EDC's</li> </ul>   |
| <b>5) 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  | <ul style="list-style-type: none"> <li>▪ Develop</li> </ul>   |

|  |   |   |
|--|---|---|
|  | materials/information brochures   | materials/brochures/Stickers for information dissemination with professional inputs <ul style="list-style-type: none"> <li>▪ Create and maintain a website for the sanctuary</li> </ul> |
|  | 3) Lack of ecotourism programmes and linkages with DTPC, KFDC and Travel agents | <ul style="list-style-type: none"> <li>▪ Address the issue through FDA and develop linkages with allied institutions</li> </ul>   |
|  | 4) No visitor management institutions   | <ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>   |
|  | 5) Inadequate infrastructure and staff strength                                 | <ul style="list-style-type: none"> <li>▪ Already covered</li> </ul>   |

# CHAPTER 6

## THE STRATEGIES

### 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 human habitation is clearly demarcated and no encroachments are there.

#### **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 Sanctuary is divided into the following Zones namely

- Protection Zone
- Core Zone
- Buffer Zone
- Tourism Zone

The whole Sanctuary is brought under the **Protection Zone**. The entire Klamala II Section including areas such as Ananirathi, Venkulam medu, Pulivizhunthanchuna,

Varayattumudi, Meenmutty, Theerthakara, Kaduvapara, Athirumala etc comes under the **Core Zone**. The Kotoor Section area, including Valliyar, Mullayar, Utharamkayam etc comes under the **Buffer Zone**. The water spread area of the Reservoir and the adjoining forests in the Klamala I Section comes under the **Ecotourism Zone**.

### **6.3.1 Plan for Protection Zone**

#### **6.3.1.1 Measures to curb illicit activities**

The Sanctuary is supported with Anti Poaching Camp Sheds at places like Puravimala, Narayappu, Theerthakara, Bhoothaka, Mullayattumukku, Kottamanpuram, Karimangulam, Vettimurichakone, Ananirathy, Meenmutty and Keerikuzhi. Protection watchers shall halt permanently in the Camp Sheds. Improvement of these structures and their periodic maintenance should be carried out regularly. Bathrooms and toilets need to be constructed where there are none. 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. In addition to this, new camp sheds are proposed at Thalamutty, Valliyar, Venkulam. Steps shall be taken to persuade owners to surrender weapons and enforce legal provisions. 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. Considering the various types of works such as attending nature camps, issuing entrance tickets to visitors and giving information, looking after livestock and attending for court duty, besides the normal duties of protection and supervision of departmental works, the present strength of protective staff is inadequate.

**TABLE 30: DETAILS OF PROPOSED STAFF POSITION IN WILDLIFE WARDEN'S**

#### **OFFICE**

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

|    |                   |   |   |
|----|-------------------|---|---|
| 9  | Part time sweeper | 1 | 1 |
| 10 | Attendar          | 1 | 1 |

**TABLE 31: DETAILS OF PROPOSED STAFF POSITION IN ASSISTANT WILDLIFE**

**WARDEN'S OFFICE**

| <b>Sl.no</b> | <b>Staff</b>         | <b>Present Strength</b> | <b>Proposed Strength</b> |
|--------------|----------------------|-------------------------|--------------------------|
| 1            | Asst.Wildlife Warden | 1                       | 1                        |
| 2            | Deputy Ranger        | Nil                     | <b>1</b>                 |
| 3            | Forester             | 6                       | 6                        |
| 4            | Forest Guard         | 12                      | <b>15</b>                |
| 5            | Wildlife Assistant   | 1                       | 1                        |
| 6            | Reserve Watcher      | 2                       | 2                        |
| 7            | U.D.Clerk            | 1                       | 1                        |
| 8            | L.D.Clerk            | Nil                     | Nil                      |
| 9            | Typist               | Nil                     | Nil                      |
| 10           | Driver               | 2                       | 2                        |
| 11           | Peon                 | 1                       | 1                        |
| 12           | Part time sweeper    | 1                       | 1                        |
| 13           | Boat Driver          | 2                       | 2                        |
| 14           | Watcher cum cook(IB) | 1                       | 1                        |

**6.3.1.2 Communication & accessibility improvement measures**

The office of the Wildlife Warden and Assistant Wildlife Warden are provided with telephone and wireless sets. All the interior camp sheds are linked through wireless network. In addition to this, there is a need for the following activities for improving the present situation.

- Upkeep and periodic maintenance of all existing buildings shall be done (list 3.8.1)
- The unfinished buildings are listed in Table (), which may be renovated and improved after obtaining a clearance from Vigilance department in order to confirm that no court/vigilance cases are pending against it. Buildings which are damaged beyond repair may be disposed off after proper valuation by competent authorities

- Procurement and maintenance of vehicles, boat and field equipments
- The Assistant Wildlife Warden should ensure that all department staff are using department supplied mobile sim cards with CUG facility (list 3.7, Table 12)
- Improvement and maintenance of all existing roads, trek paths, bridges, culverts, fence etc shall be done to improve the accessibility (list 3.8.2). In addition the following new trek paths are proposed. during the plan period.

**TABLE 32: DETAILS OF PROPOSED TREK PATHS**

| Sl. No | Name                                | Section    | Distance (km) | Gps reading  |
|--------|-------------------------------------|------------|---------------|--|
| 1      | Antipoaching shed-<br>varayattumudi | Klamala II | 3             | N08*32'25.8"<br>E077*16'22.2"<br>N08*33'02.0"<br>E077*16'56.5" |
| 2      | Meenmutti-<br>Ayanimudappu          |            | 3             | N08*34'16.0"<br>E077*12'44.1"<br>N08*33'44.1"<br>E077*13'32.3" |
| 3      | Neerazhippara-<br>ashampu           |            | 2.5           | N08*32'39.6"<br>E077*13'08.2"<br>N08*32'36.3"<br>E077*15'35.7" |

### **6.3.1.3 Fire protection measures**

- All existing firelines (List 3.10d) shall be maintained annually to control fire incidents in the sanctuary. All fire prone areas treated under NAP shall also be fire protected. In addition the following new fire line is proposed during the plan period

**TABLE 33: DETAILS OF PROPOSED FIRE LINES**

| Sl. No | Name                                       | Section    | Distance (km)    | Gps reading                                    |
|--------|--|------------|------------------|--|
| 1      | Venkulam-<br>Thalamutty -<br>Varayattumudi | Klamala II | Around 10<br>kms | N08*33'02.0-<br>N 08*33'02.0"<br>E077*16'56.5" |

- Participatory fire management involving the local stakeholders' and awareness creation

- Engaging daily wages mazdoors for fire protection
- Early controlled burning of grasslands are proposed

#### 6.3.1.4 Habitat Improvement

- Controlled burning of grasslands: It is identified that 7 sites in the sanctuary are having grasslands having an extent of around 100-150ha each. The present plan proposes for control burning of around 100ha each year. Each of the 7 sites may be sub divided into 10 blocks having an approximate area of 10-15ha and select one of this blocks from each of the 7 sites every year on a rotation basis. Details of grasslands are shown below.

**TABLE 34: DETAILS OF GRASSLANDS**

| Sl. No | Name                               | Section    | Area  | Gps reading  |
|--------|------------------------------------|------------|-------|--|
| 1      | Vengulammedu-Noolmudy              | Klamala I  | 200ha | N08*50'417"<br>E077*26'216"<br>N08*50'592"<br>E077*25'804" |
| 2      | Manappu-kannithoonmoodu            | Klamala I  | 100ha | N08*30'484"<br>E077*13'696"<br>N08*30'824"<br>E077*12'884" |
| 3      | Varayattumudi                      | Klamala II | 150ha | N08*32'57.4"<br>E077*16'38.2"                              |
| 4      | Venkulam                           | Klamala II | 20ha  | N08*52'9.10"<br>E077*27'22.2"                              |
| 5      | Vanganadupp-Pulivizhunthanchuna    | Klamala II | 150ha | N08*55'63.1"<br>E077*25'35.7"                              |
| 6      | Pulivizhunthanchuna-Bharathampullu | Klamala II | 100Ha | N08*34'43.9"<br>E077*14'20.2"                              |
| 7      | Theerthakara - Shhethanganpara     | Klamala II | 150Ha | N08*35'15.0"<br>E077*13'41.3"                              |

- Eradication of invasive and exotic weeds.

**TABLE 35: DETAILS OF WEED INFESTED AREAS**

| Sl. No | Name                               | Section   | Area                |
|--------|------------------------------------|-----------|---------------------|
| 1      | "Kalapayar"(Pueraria phaseoloides) | Klamala I | 100ha at Ananirathy |

- De silting and maintenance of water holes and check dams shall be done annually during the plan period (list 2.5.2). In addition the following new Check dams & water holes are proposed to be constructed.

**TABLE 36: DETAILS OF PROPOSED CHECK DAMS & WATER HOLES**

| Sl. No | Location                | Section    | GPS Readings                    |
|--------|-------------------------|------------|---------------------------------|
| 1      | Thalamutty              | Klamala II | N 08*31'56.1"<br>E 077*16'02.9" |
| 2      | Near Varayattumudi shed | Klamala II | N 08*32'11.5"<br>E 077*16'24.4" |
| 3      | Plankkad thoppu         | Klamala II | N 08*34'15.3"<br>E 077*13'40.8" |

- Catchment area protection by appropriate soil and moisture conservation works and planting
- Eco restoration of degraded forest in the sanctuary at Kottoor and Klamala
- Conservational measures for Myristica Swamps.

All the myristica swamp areas must be fire protected. Suitable Soil moisture conservation works can be taken up in all the areas. Identification of the species and their associates can also be done.

**TABLE 37: DETAILS OF MYRISTICA SWAMPS**

| Sl. No | Location                       | Section    | Area cents | Gps reading                   | Species                           |
|--------|--------------------------------|------------|------------|-------------------------------|-----------------------------------|
| 1      | In front of Bhoothaka building | Klamala II | 25         | N08*33'12.5"<br>E077*13'34.9" | Kambakam (belongs to pine family) |
| 2      | Chettanolichacone              | Klamala II | 50         | N08*32'29.6"<br>E077*13'22.9" | "                                 |
| 3      | Narayappu                      | Klamala II | 25         | N08*32'47.8"<br>E077*14'58.9" | "                                 |
| 4      | Above the Narayapu             | Klamala II | 25         | N08*31'57.3"<br>E077*18'09.4" | "                                 |
| 5      | Pond area of pulichamavinmoodu | Klamala II | 50         | N08*32'42.6"<br>E077*14'21.4" | "                                 |

|   |                      |            |      |                               |    |
|---|----------------------|------------|------|-------------------------------|----|
| 6 | Moongavilathodu area | Klamala II | 50   | N08*34'14.2"<br>E077*13'41.5" | '' |
| 7 | Kottoor              | Kottoor    | .5ha | No8*33'478"<br>E077*12'768    |    |

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

- Study on the habitat and biology of Nilgiri Tahr and their periodical monitoring
- Mapping of vegetation, drainage etc
- Wildlife Monitoring
- Documentation of flora and fauna, impact of invasive weeds
- Conduct periodical surveys and assessment of animal populations, birds, reptiles etc
- Rapid biodiversity assessment of critical wildlife habitat area at Varayattumudi

### **6.3.1.6 Conservation awareness**

- Display of awareness/sign boards
- Take strict steps to make the Sanctuary a plastic free zone and levy fine from rule violators
- Conduct workshops, seminar and public awareness programmes
- Development and distribution of brochures, posters, leaflets and pamphlets

### **6.3.1.7 Wildlife Veterinary Care**

- Vaccination of cattle in the tribal and surrounding hamlets
- Provide support for equipments, medicines and manpower
- Phase out scientific relocation of Spotted Deers in the Wild
- 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 entire Klamala II Section including areas such as Ananirathi, Venkulam medu, Pulivizhunthanchuna, Varayattumudi, Meenmutty, Theerthakara, Kaduvapara, Athirumala etc comes under 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 must be implemented in this zone. No tourism activities may be allowed here except for research purposes.

### **6.3.3 Plan for Buffer Zone**

The Kotoor Section area, including Valliyar, Mullayar, Utharamkayam etc comes under the Buffer Zone. All the strategies proposed in the protection plan will be strictly practiced in this zone. Further a separate ecodevelopment plan must be developed and implemented by the Wildlife Warden in a phased manner involving the local community. The inactive EDC's shall be dissolved. The pilgrimage to Agasthyarkoodam shall be regulated under strict control.

### **6.3.4 Plan for Ecotourism Zone**

The water spread area of the reservoir and the adjoining forests in the Klamala I Section comes under the Ecotourism Zone. 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.

## **6.5 THEME PLANS**

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

- Protection Plan
- Fire Plan
- Ecotourism Plan
- Water Resource Management Plan
- Eco Restoration Plan
- Eco Development Plan

### **6.4.1 Protection Plan**

Neyyar Wildlife Sanctuary is divided into various compartments with required number of anti poaching camp Sheds with 3 new camp sheds proposed at Thalamutty, Valliyar, and Venkulam. 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
- Engaging daily wages protection mazdoors
- Associating EDC members in protection activities
- Involving tribal 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 areas- (List 3.4.3)
- Participatory fire management activities, tracing fire lines and awareness creation(List 3.10a)
- 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 based on the carrying capacity of the area
- Close monitoring of the ecotourism activities and assess the impact especially the Agasthyarkoodam visit
- Training to staff and EDC members on visitor management
- Develop a website, brochures, sign boards, stickers, pamphlets etc
- Take steps to make the zone plastic free and levy fine from rule violators
- Income generation through ecotourism by implementing new eco tourism packages to Theerthankara, Utharamkayam and Meenmutty ,with intermediate

halts at Kappukad or Menmutty and utilization of the fund generated for the management of sanctuary and welfare of EDC's

#### **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 Neyyar dam plays a significant role in the water cycle. The following activities are proposed for the effective water resource management of the sanctuary

- Updating the drainage map
- Installation of meteorological station
- Annual maintenance of check dams, water holes, etc (list 2.5.2)
- Construction of mini check dams and water holes at strategic areas. (6.3.1.4)
- Protection of the catchment area by appropriate soil and moisture conservation measures with special reference to Thenmala , Puravimala and Karikkuzhy where erosion is reported as serious

#### **6.4.5 Eco Restoration Plan**

- Identifying more degraded forest patches
- Initiating soil and moisture conservation works at degraded patches at Ananirathy, Venkulamedu, Kurathiupp, Kunnathu mala etc
- Planting appropriate indigenous/fruit bearing trees/ bamboo etc
- Monitoring the restoration progress and evaluation

#### **6.4.6 Eco Development Plan**

- Active EDC's must be revamped and dormant ones to be dismissed .List of functional and dormant EDC's are given in table....
- Promote use of renewable energy sources ( solar lamp, biogas etc) in tribal settlements and fringe area population of the sanctuary. Refer basic survey details shown in 4.1.
- A committee shall be formed from each EDC for the periodical maintenance of solar fencing in their areas and got approved in the FDA.. New solar power fencing shall be taken up according to availability of fund around tribal colonies which are devoid of it. (Refer 4.1)

- All trenches and kayyalas shall be periodically maintained to reduce incidences of man animal conflicts.(Refer 4.2)

## **CHAPTER 7**

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

#### **EDUCATION**

#### **7.1 AN OVERVIEW**

Wilderness based recreation from where the concept of ecotourism emerged has an important value and an important role in support of PA 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)Interpretation Centre (ii) Nature education centre (iii) Boating in reservoir.(iv) Medicinal garden (v) Lion safari park (vi) Crocodile research and rehabilitation centre (vii) Deer rehabilitation centre (viii) Eco shop.

#### **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**

- 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 programmes on nature conservation
- Develop education materials focusing wildlife for various target groups-leaflets, brochures, pamphlets, posters etc
- Procure equipments such as computer, laptop, digital camera, audio visual equipments etc for conducting nature camps effectively
- Prepare a professional documentary and website for the Sanctuary
- Improve the condition of the herbal garden of medicinal plants
- Improve the camping facilities in the Interpretation Centre cum Dormitory
- Upgrading facilities and proper maintenance of Deer Rehabilitation Centre, Lion Safari Park and the Crocodile Rehabilitation Centre

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

- Capacity building and training to EDC members and staff on human interaction visitor management, ecotourism, identification of flora and fauna etc
- Procurement of equipments for ecotourism such as binocular, boat, life jacket 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
- . Implement modern ticket- issuing system to visitors

Wildlife Warden will conduct annual review of environmental conservation programmes and nature based regulated tourism activities. The tourism activities needs to be strictly controlled and regulated. Trekking and interior camping in the forests should be allowed only for approved ecotourism packages. Trekking to Agasthyarkoodam for visitors during off season shall be conducted only with the prior approval of Wildlife Warden and as per the norms approved in the FDA. Trekking and bird watching trails shall be conducted in the Ecotourism zone only. EDC's will be assisting the ecotourism activities

which shall be under the full control and supervision of Forest Department.. Eco development surcharge shall be levied from visitors and must be recycled for sanctuary management as well as strengthening ecotourism programmes which shall be revised by the FDA from time to time to meet the requirements

**TABLE 38: DETAILS OF INCOME THROUGH ECOTOURISM ACTIVITIES**

| Sl.No | Year    | Income generated (RS) |
|-------|---------|-----------------------|
| 1     | 2008-09 | 23,56,977             |
| 2     | 2009-10 | 21,60,910             |
| 3     | 2010-11 | 23,05,005             |

From the above data it is clear that the area has tremendous tourism potential if administered properly

# 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 VISION**

*“Strengthening People-PA interface through revamping the EDC’s and to reduce the people dependency on the Sanctuary”*

#### **8.2.2 ISSUES**

- (i) Man Animal Conflict
- (ii) Fire
- (iii) Dormancy of some EDC’s

- (iv) Lack of alternative livelihood options
- (v) Firewood collection & pollution

### **8.2.3 STRATEGIES**

#### **8.2.3.1 Man animal conflict**

- Timely assessment of wildlife damage and payment of compensation
- Persuade people to relinquish weapons
- Institution of crop insurance
- Prompt maintenance of electric power fencing to prevent wildlife entering the farmlands
- Designing appropriate ecodevelopment programmes
- Channelizing funds from various sources, local bodies/other line department/Government of India through FDA
- Development of adequate trained support team including social workers, voluntary service organizations etc
- Planting of Agave americana or similar species as a biofencing along the boundaries to reduce man animal conflict

#### **8.2.3.2 Fire**

- Conduct 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

#### **8.2.3.3 Revamping the EDC's**

- Take steps to revamp the active EDC's & to abolish inactive ones
- Impart training to staff and dependant Communities

#### **8.2.3.4 Lack of alternate livelihood options**

- Explore possibilities of developing finished products
- Impart training to EDC members

- Linkage with similar organizations

#### **8.2.3.5 Firewood collection and pollution**

- Provide LPG gas, biogas, fuel efficient choolahs etc to the poor forest dependant communities
- Propose Fuel Wood Plantation in private and public area
- Study the extent and impact of firewood collection
- Display awareness boards
- Promote supply biodegradable carry bags to settlement and fringe area population as far as possible
- Establish waste bins in the pollution prone area
- Develop recycling method of plastics and other non degradable material through FDA

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

- Alternate livelihood practice
- Scholarship to the forest dependent community children
- Developing and improving drinking water facility
- Setting up of self help groups
- Conducting medical camps
- Opening of eco shops
- Value addition centres for NWFP
- Active involvement and steady income through eco tourism programmes

The Ecodevelopment committees may meet together at least once in a month and evaluate their activities. The Assistant Wildlife Warden can attend such meeting. The Wildlife Warden can ensure the monthly meeting of the EDC's in random. Detailed schedule of meetings can be finalized in FDA general body meeting.

# 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 & STRATEGIES OF THE PLAN**

*“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 STRATEGIES**

#### **9.3.1 Research**

- Study on the habitat and biology of Nilgiri Tahr & mapping of the critical wildlife habitat at Varayattumudi

- 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
- Study the extent of wildlife damage caused and the crop involved
- Study the extent and impact of firewood collection
- Evolve scientific/sustainable collection method for NWFP management
- Socio economic status survey of tribals inside PA

### **9.3.2 Monitoring**

- Monitoring Nilgiri Tahr, their reproduction and habitat.
- Monitoring regeneration in the grasslands and degraded forests
- Regular wildlife health monitoring
- Monitoring the follow up activities conducted by the nature camp students
- Monitoring Ecotourism impact

### **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
- Impart training to EDC members and staff for sustainable collection of NWFP and value addition
- 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

# 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 & STRATEGIES OF THE PLAN

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

The present organizational structure of the Sanctuary

**Chief Conservator of Forests-1**

Agasthyavanam Biological Park

(Thiruvananthapuram)



**Wildlife Warden-1**

(Thiruvananthapuram)



**Assistant Wildlife Warden-1**

(Neyyar)



### **Foresters-6**

(Kottoor 1, Klamala,I-1 Klamala,II-1, Headquarters-3)



### **Forest Guards-12**

(Kottoor 2-, Klamala,I-3, Klamala,II-3, Headquarters-4)

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 Neyyar 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. Non functional EDC's shall be dismissed and active ones shall be reconstituted by modifying the micro plans. The post of a Deputy Ranger need to be sanctioned to co-ordinate, monitor, and control ecotourism activities in the Sanctuary. The plan aims to purchase 2 new jeeps and 2 boats for improving the protection as well as ecotourism activities .