

Management Plan of Chinnar Wildlife Sanctuary 2012-13 to 2021-22



**Department of Forests and Wildlife
Government of Kerala**

Preface

Chinnar, located in the rain shadow region of Kerala, has unique value due to its rich biodiversity, climatic peculiarities and anthropological importance. Considering these values, the area, which was declared as a reserved forest in 1942, was notified as Chinnar Wildlife Sanctuary in 1984.

The strategic location along the interstate boundary, the presence of a number of tribal settlements and presence of valuable sandal forest along the western fringes poses challenges for the successful management of this unique protected area in Kerala.

The introduction of eco development and ecotourism programmes, directly benefiting the local dependents in gaining sustainable livelihood, is of great help in managing the challenges in the conservation of the unique biodiversity and its rich cultural heritage. The plan aims to attain these objectives by incorporating the principles of eco development with conservation strategy.

Various workshops involving forest officials, scientists, professionals and local people were conducted for the preparation of this Plan. It is prepared as per the guidelines of the Ministry of Environment and Forests and approved by the Chief Wildlife Warden of the State. All the future management activities would be carried out only as per the prescriptions of this approved Management Plan.

**Munnar
15-03- 2012**

**P.U. Saju
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Acknowledgement

I wish to express my deep gratitude to Sri. R. Rajarajavarma IFS, PCCF and HOFFE, Sri. V. Gopinathan. IFS, P.C.C.F, Sri. R.R.Shukla. IFS, Addl. P.C.C.F, Sri. O.P Khaler IFS, C.C.F (Wildlife), Northern Region, Sri. K.V. Subramaniam. IFS, Field Director (Project Tiger), and Sri. Bennichan Thomas. IFS, C.C.F (HRC), who were very generous with their valuable insights and guidance for the preparation of this Plan.

I am also thankful to A.P. Sunil Babu, D.F.O, Flying Squad, Punalur, Sri. Roy. P. Thomas D.C.F (Vig.), Ms. K. Geetha, Dy. Director (Wildlife Education), C. Radhakrishnan , Dy. Director (Wildlife Education) and Dr. M. Balasubramaniam, Conservation Biologist, Periyar Foundation, Dr. Veeramani, Ecologist, Periyar Foundation who were closely and deeply associated with the preparation of the Plan.

A special word of thanks is due to the officials and various stakeholders who participated in the meetings and workshops organised by the Forest Department and enriched the Plan with their ideas and knowledge.

My acknowledgements would be incomplete without mentioning the contributions of Sri. James Zacharias, Dr. P.S. Easa and Dr. Jomy Augustine at various stages of the Plan. My sincere thanks to them

I also deeply acknowledge my gratitude to Sri. Afsal Ahamed, Assistant Wildlife warden, Chinnar Wildlife Sanctuary and the field staff for their active involvement though out the process of preparation of this Management Plan.

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PART - I
THE PROTECTED AREA:
THE EXISTING SITUATION

INTRODUCTION TO THE AREA

1.1. Name, location, constitution and extent

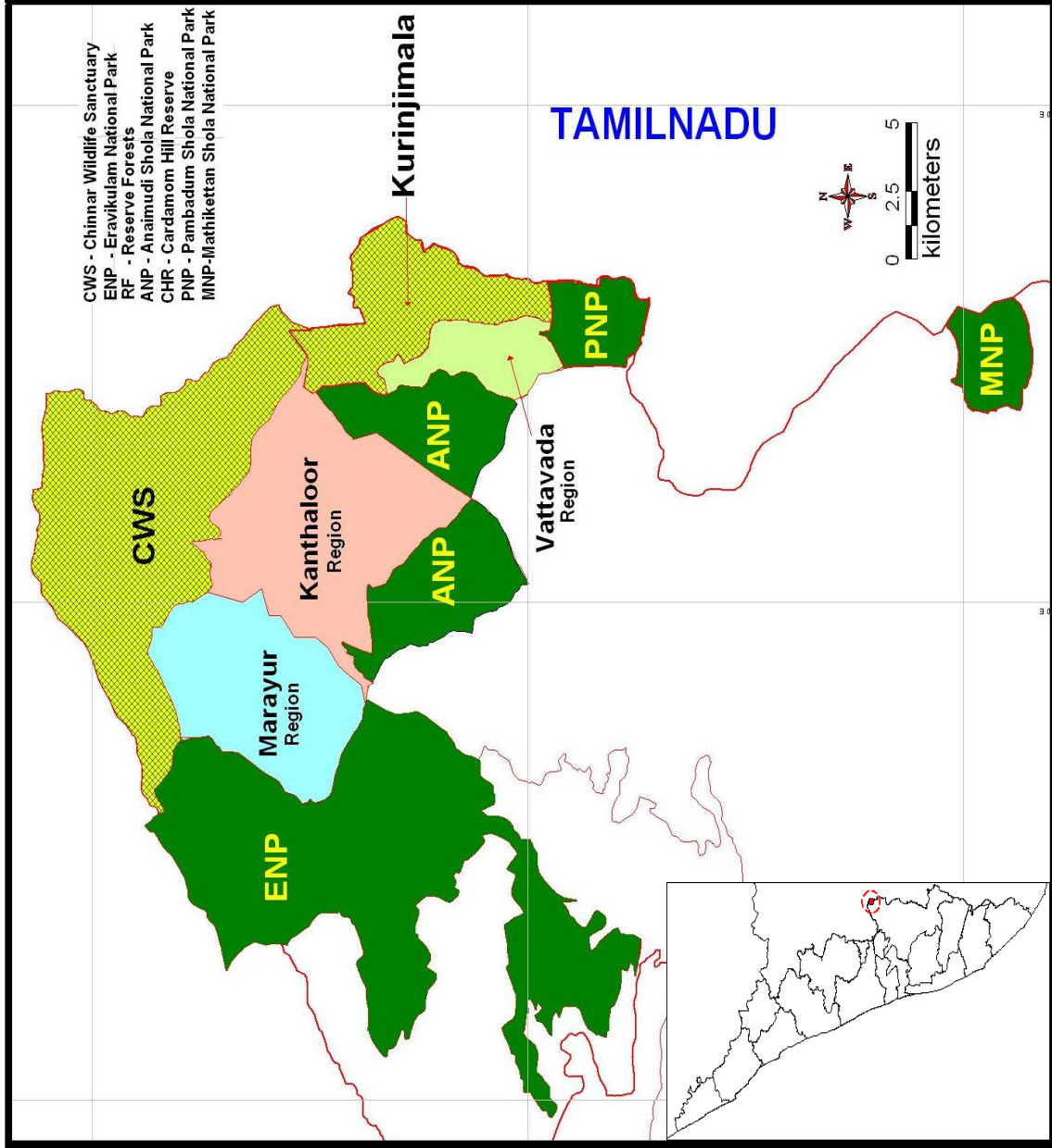
Chinnar Wildlife Sanctuary was declared as a wildlife sanctuary in August 1984 as per notification (G.O (P) No. 229/84/AD) of the Kerala Government. It is located in the eastern part of the High Ranges of southern Western Ghats of Kerala. The Sanctuary, which is situated between 10° 15' to 10° 21' N latitude 77° 05' to 77° 16' E longitude, has a total area of 90.44 km². The area was notified as a reserve forest in May 1942 vide notification R.Dis.No. 1414/42/Devpt (Annexure -1) The area falls in the Marayoor and Kanthalloor Panchayat of Devikulam Taluk in Idukki District and is regarded as one of the important protected areas in the Western Ghats due to its ecological, floral and geomorphological significance. It falls under the jurisdiction of Munnar Wildlife Division which has its Headquarters at Munnar. The habitat types range from shola-grassland to dry thorny scrub, across a diverse cultural landscape as well, making the PA unique in comparison with others.

1.2. Approach and access

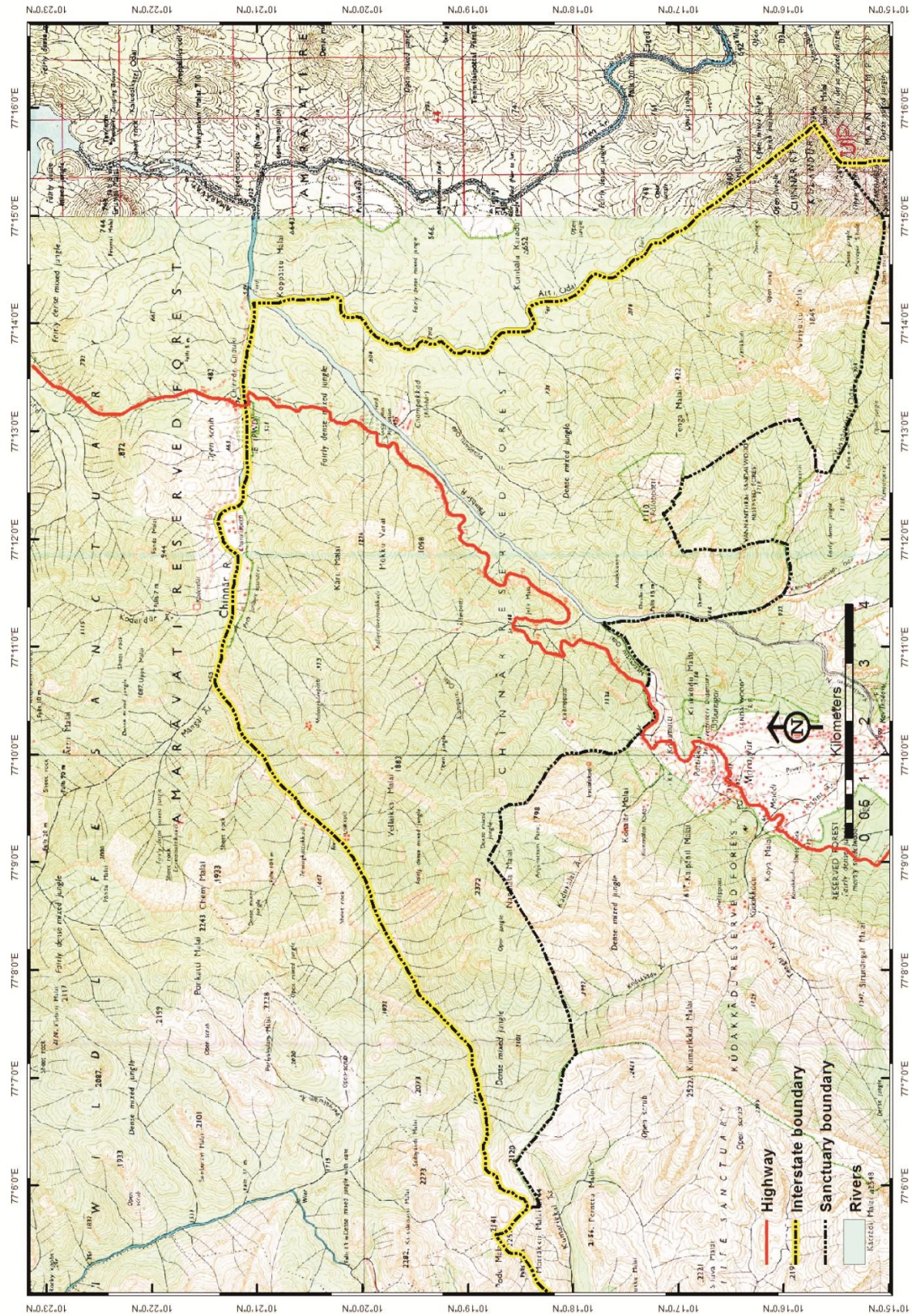
The Sanctuary is accessible from Kochi (180 km) and Coimbatore (110 km) airports along main roads. The Munnar–Udumalpet road that passes through the Sanctuary for 16 km. roughly divides it into more or less equal portions. The nearest railway station in Kerala is Aluva (180km.) and in Tamil Nadu, Pollachi (60km.). The nearest town is Marayoor.

1.3 Statement of Significance

Chinnar Wildlife Sanctuary is located in the rain shadow region of Western Ghats and represents a large number of plants and animals unique to the thorny vegetation. Apart from the dry thorn forests, due to the significant variation in altitude and rainfall, it has a wide array of habitat types like deciduous forests, dry thorny forest, riparian forest, sholas and grasslands that are interspersed with plains, hillocks, rocks and cliffs which provide microhabitats for varied forms of life. The Sanctuary falls under the Anamudi Elephant Reserve. It is an abode of reptilian fauna and the richest in Kerala in terms of the number of species. *Albizia lathamii*, a



Map. 1 : Location Map of Chinnar Wildlife Sanctuary



Map. 3 : Boundary of Chinnar Wildlife Sanctuary on Topo Sheet

critically endangered species has been reported from the dry forests of Chinnar. It is a well known repository of medicinal plants. The riverine forests along Chinnar and Pambar support a healthy population of Grizzled Giant Squirrel. The famous 'white bison of Manjampatti' has been reported from Chinnar. With 225 species of birds, Chinnar is rich in avian diversity. In association with the neighbouring PAs, Chinnar forms part of a viable conservation unit. The Sanctuary provides livelihood options and helps in maintaining the cultural heritage of tribes such as Hill Pulayas and Muthuvans. Archaeologically significant megalithic burial sites consisting of dolmens and cysts are found within the Sanctuary. Chinnar Wildlife Sanctuary offers great opportunities for developing a dynamic model of biodiversity conservation in a human dominated landscape. It is the only habitat in the state where the endangered Grizzled Giant Squirrel (*Ratufa macroura*) and Indian Star Tortoise (*Geochelone elegans*) are seen.

1.4 Values of the Protected Area

1.4.1 Value related to flora

- Repository of Medicinal Plants of ethno botanical importance
- Its habitat spectrum - especially a wide range of altitudinal zonation and consequent unique biodiversity
- Only sanctuary in Kerala with a riparian gallery forests
- Only sanctuary in Kerala with dry deciduous forests and sandal forests
- Presence of *Albizzia lathamii*, a critically endangered tree species

1.4.2 Value related to fauna

- Supports the only population of Grizzled Giant Squirrel in Kerala
- Richness in avian and reptilian diversity
- Presence of Star Tortoise, Marsh Crocodile, Yellow Throated Bulbul, Tufted Grey Langur

1.4.3 Values related to watershed

- Prominent catchments of an East flowing river particularly, the immediate catchment of Amaravathi reservoir in Tamil Nadu

1.4.4 Geographical Values

- Being the only link between Anamalai hills and the Kodaikkanal slopes the Sanctuary occupies a pivotal position in the eastern slope forests of the Western Ghats
- Crucial for the longevity of the shola grassland ecosystem of Eravikulam National Park and southern portion of the Anamalai Tiger Reserve of Tamil Nadu

1.4.5 Archaeological and Anthropological Values

- Only protected area in Kerala with Hill Pulaya tribal community.
- Remnants of Megalithic Burial sites including Dolmens and cysts

1.4.6 Aesthetic and Educational Values

- Opportunities of human ecological studies
- Eco – Tourism Potential
- Potential for imparting Nature Education.

FLAGSHIP SPECIES

Fig . 1 Grizzled Giant Squirrel (*Ratufa macroura*)



The Grizzled Giant Squirrel (*Ratufa macroura*) is a large tree squirrel in the genus *Ratufa* found in the highlands of the Central and Uva provinces of Sri Lanka, and in patches of riparian forest along the Kaveri river and in the hill forests in Kerala and Tamil Nadu. IUCN lists the species as Near Threatened due to habitat loss & poaching. *R. macroura* is the smallest of the giant squirrels found in the Indian subcontinent, with a head and body length of 25 to 45 centimeters (9.8 to 18 in), and tail measuring roughly the same or more), for a total length of 50 to 90 centimeters (20 to 35 in). It has small rounded ears with pointed tufts. The home range of an individual is between 1,970 and 6,110 square meters.

In India, the species can be seen only in Chinnar Wildlife Sanctuary & Grizzled Giant Squirrel Sanctuary in Tamil Nadu.

Fig. 2 Indian Star Tortoise (*Geochelone elegans*)



The Indian Star Tortoise (*Geochelone elegans*) is a species of tortoise found in dry areas and scrub forest in India and Srilanka. A large number of specimens of this species are found in the illegal wildlife trade in India. Chinnar Wildlife Sanctuary is home to this endangered species.

BACKGROUND INFORMATION AND ATTRIBUTES

2.1. Boundaries

2.1.1. Legal Boundaries

The erstwhile Chinnar Reserve was notified as a Sanctuary in 1984. The original notification of the Chinnar Reserved Forest dates back to 1942 and the boundaries follow a jumble of cairn numbers and survey numbers. At present the boundaries are fully demarcated but in certain areas like Njavala-Ollavayal, the status is vague and may not correspond to the situation on the field.

The boundary description as per the notification is as follows:

North:- Starting from cairn No.1 at the trijunction of the boundaries of Coimbatore District, Marayoor Pakuthy and Kannan Devan Hills at the North West corner of the Reserve, the line goes in a nearly north easterly direction for about 5643/4 chains along the Chinnar River to cairn No.2 at a State Boundary Survey Stone on the bank of the Chinnar River, thence more or less east- south east for about 2141/4 chains along the above said river to cairn No.3 at the State Boundary Survey Stone on the bank of the river side of that Survey No. for about 11/4 chains to cairn No.4 at its south west corner. (This is also the Western most point of S.No.251/1/1). Thence nearly east along the south side of the S.No. 257/1/1 for about 333/4 chains passing cairns No. 5 to 15 to cairn No.16 at its south east corner. Thence nearly south for about 63/4 chains to cairn 17 thence nearly south for about 63/4 chains passing cairn No.18 and crossing the approach road to the P.W.D. camp shed to cairn No.19 at the right bank of the thodu flowing to Chinnar River – then nearly north along that thodu for about 103/4 chains to cairn No.20 at its junction with the Chinnar River (from cairn numbers 16 to 20 the boundary follows the Western, Southern and Eastern Boundaries of the area allowed for the P.W.D. excluding the same from the reserve.) thence nearly east along the Chinnar River for about 71/2 chains to cairn No.21, on its bank; thence nearly south east for about 43/4 chains passing

cairn number No.22, 23 to cairn No.24 on the West side of the approach road to the P.W.D. camp shed; thence east by slightly south for about $3/4$ chains crossing the above road to cairn No.24A; thence nearly east- south east for 1 chain to cairn No.24B; thence nearly north-north east for $31/2$ chains to cairn No.24C, thence east for $3/4$ chains to cairn No.24D, thence north for $11/2$ chains to cairn No.24E, thence west for $3/4$ chains to cairn No.25; thence nearly north west for about $11/4$ chains crossing the northern outlet road to cairn No.26 on the right bank of the Chinnar river situated 81 links north west of the State Boundary Survey Stone between distance 438 and 500, (from cairn 21 to 26 the boundary follows the Western, Southern and Eastern boundaries of the area allowed for the Excise Office Cart Stand and tollgate excluding the same from the reserve); thence nearly east along the same river for about 11 chains to cairn No.27 at the Revenue Stone at the North West Corner of Survey 261/1; thence nearly South West along its West side for about $11/4$ chains to cairn No.28 at its South West Corner, thence along the West, South and East sides of Survey No. 259/1 for about $63/4$ chains passing cairn Nos. 29 to 31 to cairn No.32 at its North East corner; thence nearly East along the Chinnar River for about $721/2$ chains to cairn No.34; it is junction of Pambar River with Chinnar River.

East:- Thence nearly South- South West along the left bank of the Pambar River for about $43/4$ chains to cairn No. 36 situated on the left bank of Athioda stream at its confluence with the Pambar thence nearly South South-East along the Athioda Stream (the boundary between Travancore and Coimbatore District) for about $4511/4$ chains to cairn 37 where Athiodai cross the State Boundary for about $1263/4$ chains to cairn No.38 at the top of Jambu malai peak at the trijunction of Coimbatore and Madurai Districts and Travancore State (This peak is locally known as 'Chinna Chambu Malai').

South and West:- Thence nearly south west along the state boundary for about 38 chains to cairn No. 39 at the boundary stone at the north-east corner of survey No. 72/1 of Kothukombu Pakuthy at the trijunction of Keelanthur and Kottakombu Pakuthies of Devikulam Taluk and Palani Taluk of Madurai District (This place is locally known as Vellimalai); thence in the same direction for about $631/2$ chains along the boundary between Keelanthur and Kottakombu Pakuthies to cairn No. 40 at "Chenkannimala" thence nearly West South-West along the above Pakuthy boundary for about $531/4$ chains passing Velliyangiri hills to cairn No. 41 at the Village

Boundary Stone at the trijunction of Kilanthur, Kootakombu and Kanthaloora Pakuthies (this place is also known as Vattachola lower); thence nearly North West for about $231\frac{1}{2}$ chains to cairn No. 42 at a Village Boundary Stone between Kanthaloora and Kilanthur Pakuthies, (this place is also known as Vattachola Upper) thence in same direction but more to the West for 30 chains to cairn No. 43 on the right bank of the Vannanthorai Stream ; thence nearly West North West along the right bank of the above stream for about $1091\frac{1}{2}$ chains to cairn No. 44 (here the stream leaves the boundary)) thence nearly North for about $21\frac{1}{2}$ chains to cairn No. 45 it has theodolite stone at the South East Corner of Survey No. 300/1 of Kilanthur Pakuthies thence along the East side of the above survey Number for about 9 chains passing cairn No.s 46 and 47 to cairn No. 85 of Vannanthorai Sandal Wood Reserve Block No. 11 at the theodolite stone at the North East Corner of Survey No. 300/1 thence along the Eastern, Northern and Western Boundaries of that reserve to its South West Corner at cairn No. 104 at a theodolite station on the right bank of the Kalikilavan Odai, thence nearly South West along the same bank of the said Oda for about 8 chains to its junction with the Vannanthorai River, thence along the right bank of the Vannanthorai River first nearly West North – West and then North-North West for about $1401\frac{1}{2}$ chains to cairn No. 48 at its junction with the Pambar River thence nearly North along the right bank of Pambar River for about $1071\frac{1}{2}$ chains to cairn No. 49 thence nearly North West for $21\frac{1}{2}$ chains crossing the Pambar River to cairn No. 50 on the left bank of Natchimuthu Odai at its confluence with the Pambar River: thence nearly South West along the left bank of the Natchimuthu Odai for about $831\frac{1}{4}$ chains to cairn No. 51 about $\frac{3}{4}$ chains South of the theodolite stone at the South East Corner of Survey No. 256/1; thence nearly North West along the East side of the above Survey Number for 3 chains to cairn No. 52 at theodolite stone at its North East Corner; thence more or less West for its Eastern edge; thence more or less West for about about 7 chains to cairn No. 53 at the first quarter of the 29th mile of the near road on its Eastern edge; thence crossing the road for 1 chain to cairn No. 54 on its Western edge; thence along the same edge of the road first nearly West South West and then nearly North West for about 392 chains to cairn No. 65 where the Natchimuthu Odai crosses the above road; thence along the left bank of the same Odai for about $61\frac{1}{2}$ chains to cairn No. 56 on the Southern side of Survey No. 227/2; thence along and Southern side of Survey No.

227/2 and Southern, Eastern and Northern sides of Survey No. 227/1 for about 181/4 chains passing cairn No. 57 to 64 to cairn No. 65 at the North West Corner of Survey No. 227/1 on the left bank of the Natchimuthu Odai for about 483/4 chains to cairn No. 66 at the theodolite stone at the South West Corner of Survey No. 2881/2; thence skirting the Southern Eastern and Northern sides of the above Survey No. for about 261/4 chains passing cairn No. 67 to 75 to cairn No. 76 at the theodolite stone at the North West Corner of the Survey Number on the left bank of the Natchimuthu Odai; thence first nearly North West and then West North -West along the same bank of the above Odai for about 156 chains to cairn No. 77 on the same bank Nandulamalai thence nearly South West for about 160 chains through Sy. No. 286/1/1 of Marayoor Pakuthy passing cairn Nos. 78 to 80 to cairn No. 81 at a boundary stone on the boundary between the Kannan Devan Hills and Marayoor Pakuthies to the North of Kumarikal malai and to the East of Poovar thadam thence nearly North West along the above boundary for about 146 chains passing cairns 82 to 91 (this line crosses the Poovar between cairn Nos. 85 and 86) to cairn No. 1 at the starting point on the Northern Boundary.

2.1.2. Ecological Boundaries

On the North and East, it shares a 30 km common boundary with the Anamalai Tiger Reserve of Tamil Nadu. On the West, it is bordered by the Eravikulam National Park. On the southern side, it is bordered by the Reserve Forests of Marayoor Sandal Division, part of Kurinjimala Sanctuary, and also by Revenue Lands. The Park provides ecological connectivity between the Anamalai Tiger Reserve and Eravikulam National Park.

2.1.3. Internal Boundaries

The description of internal boundaries demarcating the private rights admitted within the reserve is specified in the reserve notification of 1942. The boundaries of the rights admitted for the PWD quarters at Chinnar and the enclosure at Ollavayal is vague and needs to be verified on field.

Earlier the Sanctuary area was divided into two Sections namely Chinnar and Karimutty and internal boundary for the sections were specified. Forest Station system was introduced in

August 2005 and the entire sanctuary was brought under one forest station Karimutty. Hence these section boundaries became irrelevant.

2.2. Geology, rock and soil

Geologically the Sanctuary is comprised of gneissic metamorphic rocks from the Archean shield. The predominant rock type in the area is biotite gneiss and it is also associated with hornblende biotite gneiss in certain areas. The rocks are highly sheared and fractured at places. Joint systems are well developed. Drainage in the valley is highly influenced by these structural deformities. Intrusive bodies such as pegmatite dykes are reported from all areas. Dolerite dykes seen in lower altitudes constitute the basic intrusive. The valley is deeply eroded by the two rivers namely Chinnar and Pambar and their tributaries. Weathering is very intense as predominant rock type is gneissic. It was observed that the feldspars are altered to clay minerals. Valley fills comprise of mainly unconsolidated gravels and are of recent origin. The soil is sandy to sandy loam in texture. Sandy nature is prevalent in the riparian zone. The soil reaction varies from slightly alkaline to strongly acidic depending on the vegetation type. The soil in scrub and dry deciduous forests are slightly alkaline in reaction. This is effected by low rainfall and weak leaching of bases. On the other hand the shola soils are strongly acidic in reaction due to higher rainfall regimes and also greater input of organic material into the soil from vegetation. The organic carbon content of the soils in different forest types is an indicator of the quantum of input and output of biological material in the systems. The carbon content is very low in the scrub and riparian forest, medium in the dry deciduous forest and very high in the shola forest (Table 1)

Table 1: Characteristics of soils from Chinnar Wildlife Sanctuary

Forest Types	Gravel (%)	pH	Organic carbon	Sand(%)	Silt(%)	Clay(%)
Scrub Jungle	2 - 43	6.5-8.2	0.49 - 1.45	88 - 93	3 - 10	4 - 7
Dry deciduous	1 - 6	6.9-8.1	0.76 - 2.09	84 - 95	2 - 8	3 - 9
Shola Forest	4 - 7	4.2-5.2	4.55 - 14.03	80 - 92	4 - 11	3 - 9
Riparian Forest	0 - 3	6.4-7.3	0.39 - 0.91	88 - 96	2 - 8	2 - 4

The gravel content in the soils in scrub forest is higher than in other vegetation types indicating high degree of erosion. In the shola soil the content of gravel is negligible and this is due to the closed canopy present there.

2.3. Terrain

The terrain is undulating with hills and hillocks of varying heights. The altitude ranges from 400 m at Chinnar to 2372 m at Nandalamala. The other major peaks in the Sanctuary are Varayattumalai (1845m), Thengamalai (1422m), Vellakkalmalai (1883m), Jambumalai (1395m), Aralipara (1494m), Karumalai, Anakkunnu and Jellimalai. The area is drained by two perennial rivers passing through the Sanctuary, namely Chinnar and Pambar. During north east monsoon which is the dominant rainy season, a few ephemeral water sources take origin from higher mountains and drain the area and they dry up for the rest of the season. The digital elevation model of Chinnar Wildlife Sanctuary is given as Map : 4.

2.3.1. Contour

See Map 5: Contour map of Chinnar Wildlife Sanctuary (based on 1:50,000 SOI top sheets)

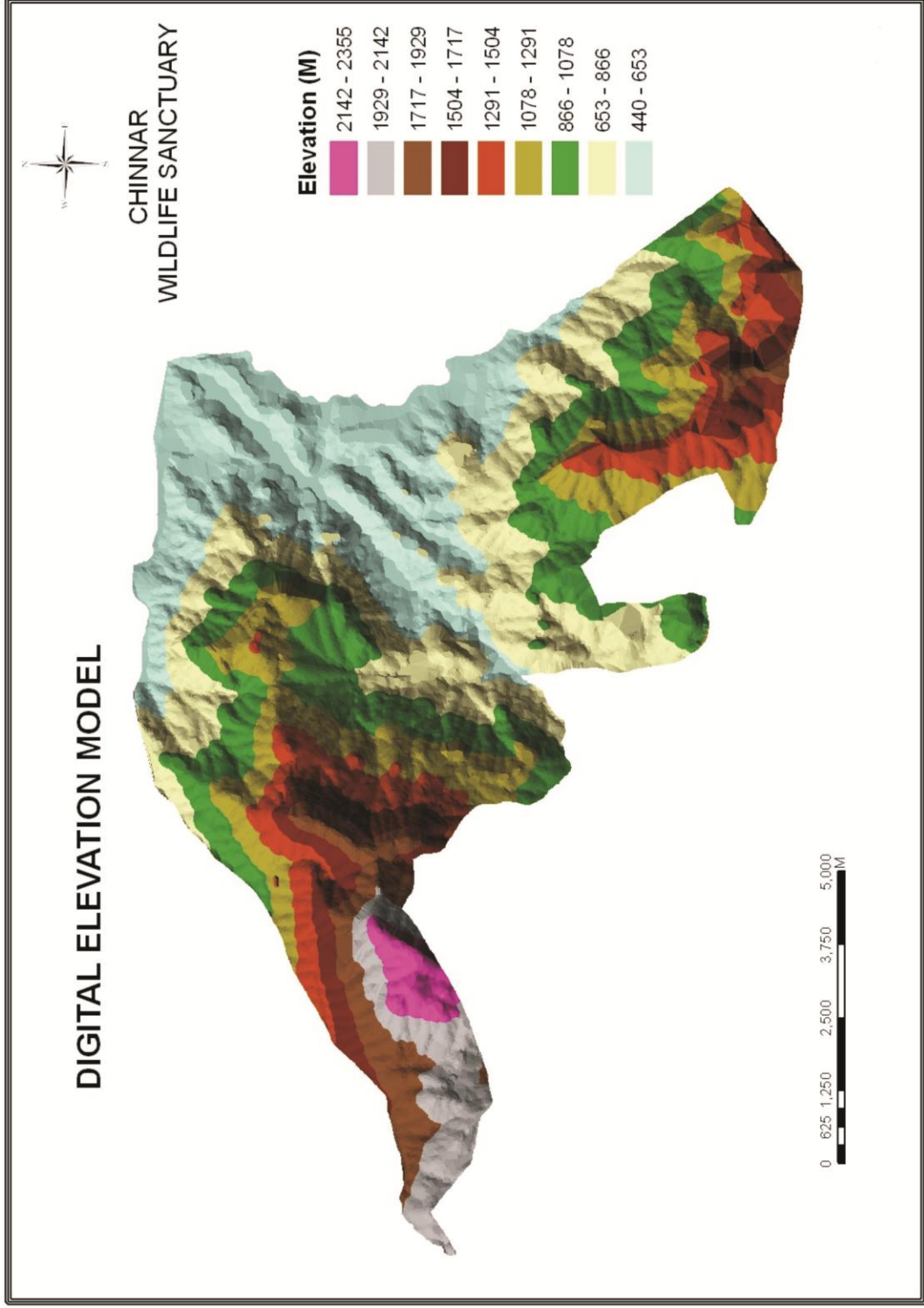
2.4. Climate

The Sanctuary is situated in the rain shadow region and hence the area experiences prolonged hot/dry season and much less rainy days. The Chinnar plains are generally hot, but the higher altitudes are cool. Chinnar Wildlife Sanctuary shows wide variations from the rule of altitudinal gradient determining microclimate. Apart from elevation, rainfall is an important parameter in regulating the temperature in the Sanctuary. The solar radiation in Chinnar is high, mainly because of less cloud cover.

The only meteorological data available with the department is the rainfall data recorded at Chinnar and is typical to the dry thorn forests of the Sanctuary. Due to factors like altitude and aspect, there is large variation in the climatic conditions across the Sanctuary.

2.4.1. Rainfall pattern and distribution

The rainfall regime of the Sanctuary is characterized by the highly variable precipitation linked with the cyclonic disturbances affecting the Bay of Bengal during the withdrawal of monsoon. The major rainfall season is during the north-east monsoons occurring during October-December.



Source : Derived from SOI Toposheet 58 F/3 & 58 F/7, 1972

Map. 4 Digital Elevation Model of Chinnar Wildlife Sanctuary

December. The rainy days in a year range between 30 to 40 days which account for about 300 - 500 mm rainfall in Chinnar and adjacent areas. But the higher altitudes areas like Olikkudy and Mangappara receive rain during both north-east and south-west monsoons with comparatively much higher rainfall. On an average the region has 6-7 months of dry period in the lower reaches and a lesser amount of dry months in the higher reaches.

Presently rainfall data is recorded only in Chinnar, which gives an idea of rainfall pattern in the Dry reaches of the protected area. Data recorded for the past 12 years is incorporated below for reference.

The rainfall data from 2000 to 2011 is given in Table 2 below.

Table 2: Monthly Rainfall Data from 2000 to 2011

Year	Monthly Rain fall data in mm												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2000	24.0	44.0	4.0	98.0	41.4	33.3	48.0	88.0	212.5	8.3	104.0	125.5	831.0
2001	21.0	10.0	17.0	66.0	80.0	39.0	53.1	5.0	144.0	113.0	114.0	122.0	784.1
2002	4.0	30.0	62.2	14.0	104.0	37.0	4.0	38.0	11.0	204.9	34.1	69.0	612.9
2003	0.0	0.0	19.0	134.4	76.9	112.2	6.1	0.00	17.7	242.2	235.0	19.0	862.5
2004	0.0	0.0	0.0	24.3	103.8	84.6	46.6	17.9	179.0	255.9	342.2	10.6	1064.9
2005	0.0	0.0	1.2	93.4	76.2	15.7	81.8	54.3	43.0	132.3	470.4	243.5	1211.8
2006	53.2	0.0	15.0	20.0	105.7	105.2	0.0	15.5	45.6	122.2	253.3	0.0	735.7
2007	9.0	0.0	13.0	0.0	105.6	66.0	59.0	92.0	103.9	149.9	43.0	139.0	780.7
2008	51.0	0.0	111.2	7.0	44.0	19.3	58.0	47.0	85.3	201.6	109.3	69.4	803.1
2009	11.3	0.0	22.0	1.0	35.5	14.3	44.8	68.6	21.8	77.4	278.6	157.2	732.5
2010	5.0	0.0	0.0	29.2	17.2	27.6	94.3	13.0	129.0	133.0	396.0	66.4	910.7
2011	0.0	0.0	0.0	41.0	41.0	30.2	8.0	28.2	34.5	173.0	223.0	12.0	590.9

2.4.2. Temperature, a summary of year round pattern

The temperature of the area is influenced by the Coimbatore-Mysore thermic regime. The mean temperature is relatively constant from July to October. The region has 6-7 month of dry period in the lower areas and lesser dry months in the higher altitudes. Presently no data is available as far as temperature is connected. No authenticated records are available.

2.4.3. Humidity

During north- east monsoon (Oct-Dec) the average humidity of the area is maximum and varies from 80% – 90 %. From June to September, the period of the south-west monsoons on the western aspects of the Ghats, the humidity varies from 60%-80 %. During the rest of the year, the average humidity varies from 57%-70%.

2.4.4. Wind speeds

The wind velocity recorded at Chinnar shows a more or less uniform magnitude except for the slightly higher speeds recorded during some monsoon months. The maximum wind speed is obtained during south-west monsoons (5.8m/s) and the average is around 1m/s. No authenticated records are available.

2.5. Water sources

Chinnar and Pambar are the major sources of water. Both originate in the sholas of the upper reaches. Pambar traverses the Turner’s Valley in Eravikulam National Park and flows down into Chinnar Wildlife Sanctuary through the Talliar Valley. Chinnar follows the interstate boundary. These two rivers merge at Koottar and drain into the Amaravathy reservoir in Tamil Nadu. Most of the rivulets and streams inside the Sanctuary come alive immediately after the north-east monsoons and dry up soon. The water in the check dams remains for a longer period but they also dry up during summer months. But a few streams originating from the upper reaches are perennial. Check dams also remain dry for most of the year and at present, are silted up. When the north-east monsoons fail, as in recent years, water becomes a limiting factor in many areas.

The name and location of check dams in the Chinnar Wildlife Sanctuary are as follows:

- | | |
|----------------------------|---------------------|
| 1. Watch Tower | 2. Pazhayakudithara |
| 3. Charalmedu | 4. Kallukadu |
| 5. Chinnar | 6. Churulipetty |
| 7. Amenity Centre, Chinnar | 8. Chambakkadu |
| 9. Orumala | 10. Muthalakulam |
| 11. Old PWD Rest House | 12. Mannala |

13. Mangayoda
15. Pelakulam
17. Kathirithodu

14. Alampetty
16. Veerapparamoda
18. Eruttalakudy

Drainage

The drainage map of the Chinnar Wildlife Sanctuary (Map :6) was generated digitally using SOI top sheets and watershed atlas maps of Kerala State Land Use Board. No proper water resource map is generated.

2.6. Range of wildlife, status, distribution and habitat

The Sanctuary offers a wide range of habitat types to the flora and fauna. There are 965 species of flowering plants, 28 species of mammals, 225 species of birds, 14 species of fish, 15 species of amphibians, 156 species of butterflies and 52 species of reptiles recorded from the Sanctuary. Rainfall and terrain are the important factors that influence animal movements. The 11 settlements spread across the sanctuary also have significant impact on the range of wildlife and habitat.

2.6.1. Vegetation

Vegetation

The vegetation shows an entire spectrum ranging from sub-temperate sholas to dry scrub of the arid plains. In many areas, the vegetation of the Sanctuary is highly disturbed mainly due to a combination of factors like earlier fellings and planting and anthropogenic pressures of the settlements inside and on the fringes, particularly cattle grazing. Therefore in many cases secondary forest types replace primary types and an obvious classification of forest types is impracticable. Notwithstanding these, the vegetation of the Sanctuary can be broadly classified in to the following types according to Champion and Seth (1968) and Chandrasekaran (1962). They are:

1. Southern tropical thorn forest (Scrub jungle)
2. Southern dry mixed deciduous forest (Dry deciduous forest)

3. Southern moist mixed deciduous forest (Moist deciduous forest)
4. Tropical riparian fringing forest (Riparian forest)
5. Southern montane wet temperate forest (Hill shola forest)
6. Southern montane wet grassland (Grasslands)

The dominant vegetation is dry deciduous forest followed by scrub forest. Together they constitute about 50 % of the total forest area. They are located in the low altitude areas. The riparian fringing forests are linearly distributed along the hill folds and occupy a small but considerable area. Shola forests occupy a tiny fraction of the total area.

Southern tropical thorn forest (Scrub jungle)

This is the least distributed forest type in Kerala and is the second major forest type in the Sanctuary with regard to the area. The open low forest type is characterized by xerophytic species with short bole and low branching. The canopy is wide open. Therefore the canopy level differentiation is indistinguishable. The hardwood trees, thorny shrubs and climbers are characteristic features of the forest type. The undergrowth is furnished with some herbaceous forms during monsoon and remains exposed for the rest of the time. This forest type is distributed at Chinnar, Champakkadu, Chungam, Nellimedu and on the slopes of Alampetty, Eachampetty, Palapetty etc.

The major species representing the forest type are *Acacia spp.*, *Euphorbia spp.*, *Capparis spp.*, *Opuntia spp.*, *Ziziphus spp.*, *Grewia spp.*, *Cordia spp.*, *Albizia amara*, *Atalantia monophylla*, *pleiospermium alatum*, *Prosopis juliflora*, *Dichrostachys cinerea*, *Diospyros cordifolia*, *Pisonia aculeate*, *Carissa carandas*, *Strychnos potatorum*, *Ceropegia juncea*, *Pergularia daemia*, *Caralluma spp.*, *Helixanthera spp.*, etc

Southern dry mixed deciduous forest (Dry deciduous forest)

The forest type is characterized by predominant hardwood deciduous tree species. The canopy is open with poor undergrowth. Bamboos are barely represented. The canopy level is vague in this type also. This is the dominant forest type in the Sanctuary constituting nearly 30%. It is found near settlements of Palapetty, Alampetty, Eachampetty, Karimalai, Thayannankudi, Puthukudi etc.

The most characteristic species present invariably in the forest type are *Anogeissus latifolia*, *Chloroxylon swietenia*, *Hardwickia binata*, *Boswellia serrata*, *Santalum album*, *Cassia fistula*, *Sterculia urens*, *Sapindus emarginatus*, *Canthium coromandelicum*, *Tarenna asiatica*, *Dodonaea angustifolia*, *Garuga floribunda*, *Shorea roxburghii*, etc.

Southern moist mixed deciduous forest (Moist deciduous)

The closed high forest is characterized mostly by deciduous plants, only for a brief time compared to the above forest type. The forest type covers less than 8% area of the sanctuary at Palapetty, Karimalai, Puthukudy, Eachampetty, Alampetty etc. The occasional occurrence of some of the characteristic tree species of the forest type along with the notable absence of some predominant trees like *Terminalia spp.*, *Xylia xylocarpa*, *Careya arborea* and *Dillenia pentagyna* might be due to the clearance of this forest type for converting to agricultural purpose. The view is strengthened because most of the agricultural areas are lying mixed with this forest type.

The upper canopy trees are *Grewia tiliifolia*, *Schleichera oleosa*, *Wrightia tinctoria*, *Bridelia crenulata*, *Buchanania lanzan*, *Pterocarpus marsupium*, *Gmelina arborea*, *Stereospermum colais*, *Albizia odoratissima*, etc. The species forming the middle canopy include *Premna tomentosa*, *Atalantia racemosa*, *Cipadessa baccifera*, *Clerodendrum serratum*, *C. viscosum*, etc. The undergrowth constitutes *Helicteres isora*, *Desmodium velutinum*, *Indigofera pulchella*, *Rhinacanthus nasutus*, *Justicia betonica*, etc

Tropical riparian fringing forest (Riparian forest)

The forest type is characterized by a few evergreen and semi-evergreen species restricted on the sides of streams forming a narrow fringe. In the Sanctuary, the forest type is restricted mostly along the side of the Pambar and Chinnar rivers.

The dominant species are *Terminallia arjuna*, *Hopea parviflora*, *Bischofia javanica*, *Mangifera indica*, *Drypates roxburghii*, *Vitex leucoxylon*, *Pongamia pinnata*, *Garcinia gummi-gutta*, *Mallotus stenanthus*, *Calophyllum calaba*, *Entada rheedei*, *Lepisanthes tetraphylla*, *Syzygium cumini*, *Schefflera racemosa*, *Homonoia riparia*, *Vitex altissima*, *Salix tetrasperma*, *Gnetum ula*, etc

Southern montane wet temperate forest (Hill shola forest)

The high altitude evergreen closed forest is characterized by short boled and branchy species. The attractive canopy of the shola species in varying shades of red is really a fascinating view and is also one of the conspicuous features of this forest type. The forest type is localized at three places, Olikkudy shola, Kariveppin shola and Koyman shola at altitudes above 1300 m. This is the only undisturbed forest type in the Sanctuary covering about 0.25% of the total area. There is no marked differentiation of canopy layers.

The dominant species of the forest type are *Syzygium spp.*, *Elaeocarpus recurvatus*, *Actinodaphne malabarica*, *Agrostistachys indica*, *Fagraea ceylanica*, *Cryptocarya anamallayana*, *Calamus gamblei*, *Pittosporum spp.*, *Gordonia obtuse*, *Mallotus tetracoccus*, *Aglaia elaeagnoidea*, *Gomphandra coriacea*, *Microtropis parviflora*, *Meliosma pinnata*, *Rhodomyrtus tomentosus*, *Mussaenda tomentosa*, *Ardisia pauciflora*, *Cinnamomum verum*, *Litsea wightiana*, *Cassine paniculata*, *Ficus amplocarpa* etc.

Southern montane wet grassland (Grasslands)

The high altitude natural grasslands are located along the boundary with Eravikulam National Park above Olikkudy and along the south-eastern extremity above Mangapparakudy. The predominant species are *Arundinella mesophylla*, *A. setosa*, *Apluda mutica*, *Ischaemum nilagiricum*, *Setaria pumila*, *Themeda triandra*, *Cymbopogon flexuosus*, *Echinochloa colona*, *Digitaria wallichiana*, *Chrysopogon zeylanicus*, *Viola betonicifolia*, *Pimpinella candolleana* etc.

Agricultural lands and plantations

The vegetation on the slopes and hilltops has been cleared earlier by the tribes for cultivation of lemon grass and food crops. The abandoned cultivated areas are devoid of shrubs and trees for a considerable area and the vegetation of that area is dominated with grasses. The lemon grass cultivation is a common practice among tribes and considerable portion of the agriculture land is utilized for this purpose. Teak and eucalyptus plantations in small patches have been raised in the past at Vanchikulam and Ollavayal. The agricultural lands comprise nearly 7% of the area of the Sanctuary.

Exotic weeds

The likelihood for exotic weeds to come up is higher wherever the natural vegetation is disturbed and in turn it is a measure to estimate the degree of disturbance of the vegetation. However, once exotics are spread, they gradually suppress the natural regeneration and take dominance over the other species due to their increased and wide adaptability resulting in the loss of biodiversity and endemism. A considerable area where shifting cultivation was being practised in the past is occupied by exotics. The areas with exotics are spread at various regions of the Sanctuary. The major exotics in the sanctuary are *Lantana spp.*, *Parthenium hysterophorus*, *Argemone mexicana*, *Vicoa India*, *Euphorbia spp.*, *Chromolaena odorara* etc.

The area composed of barren land and exposed rock constitutes a considerable part of the Sanctuary. As per available records based on the extent of exposed rocks, the habitat is getting degraded. Selection felling in the past in some localities and operations such as preparing the land for plantations in some other localities have resulted in opening up of canopy and weed infestation. Other anthropogenic pressures such as road traffic, fire wood and NWFP collection, grazing, agricultural activities and fire are also responsible for the degradation of a vast area of forests in the Sanctuary.

Vegetation mapping

Map 7: Vegetation Map (based on IRS1C satellite imagery of 1996)

2.6.2. Flora

The list of plant species reported from the Sanctuary is given in Annexure – 4.

2.6.3. Animals

Chinnar Wildlife Sanctuary with its diversity in forest types is rich in faunistic diversity. The dry open scrub forests of Chinnar Wildlife Sanctuary provide an excellent habitat for a wide variety of mammals, birds, butterflies and reptiles. List of species is given in appendix.

Mammals

Chinnar Wildlife Sanctuary has the only population of Grizzled Giant Squirrel in Kerala. The sanctuary is also home to Malabar Giant Squirrel as well as Common Flying Squirrel. Among the Primates the sanctuary is home to Bonnet Macaque, Hanuman Langur, Nilgiri Langur and Slender Loris. Apart from the Rare Rusty Spotted Cat and Nilgiri tahr, the important mammals found in the Sanctuary are Elephant, Tiger, Leopard, Gaur, Wild Boar, Sambar, Spotted Deer, Barking Deer, Porcupine, Wild Dog, Common Langur, Bonnet Macaque, Jackal, Sloth Bear, Nilgiri Langur, Jungle Cat etc.

The Chinnar plains have groups of Gaur, Spotted Deer and Sambar. Tigers are present but their home ranges extend to the neighbouring forests. Leopards are common. There is marked seasonality in the movement of Elephants and Gaur. The legendary white bison has been sighted in the Chinnar plains. Such Albino Gaur has been reported from Kodaikanal area, Indira Gandhi Wildlife Sanctuary and Chinnar Wildlife Sanctuary. Since it was earlier seen in adjoining Manjampetti valley these white ones were also called “Manjampatti White Bison”. Spotted deer is the dominant herbivore in number.

Fishes

Among 14 species of fishes observed in the Chinnar and Pambar rivers, *Garra mullya*, *Barilius gatensis* and *Danio aequipinnatus* are found to be abundant. A healthy population of *Tor khudree*, the endangered hill stream fish was also recorded. *Puntius carnaticus*, *Garra gotyla stenorhynchus* and *Barilius bandelisis* confirms its occurrence in Kerala.

Amphibians

Amphibians are low in number of species. Two species of tortoise were recorded. *Geochelone elegans* (Star Tortoise) is an endangered species adapted to the dry deciduous habitat and in Kerala; its distribution is restricted to Chinnar. *Bufo parietalis*, *Rhacophorus malabaricus* and *Nyctibatrachus major* recorded from the Sanctuary are endemic amphibians to Western Ghats while *Micrixalus saxicola* is endemic to Kerala.

Reptiles

The Sanctuary with 52 species of reptiles is rich in terms of number of species. Out of the 29 species of snakes observed, 5 species belong to the blind snake group, 16 are colubrid, 2 are boas, 2 are elapids and 4 are viperids. Among the blind snakes, the worm snakes were represented by 4 species of typhlops. *Ampheiesma beddomei*, a rare snake endemic to Western Ghats and the saw scaled viper, *Echis carinata* are present. The agamids in Chinnar are widely distributed. *Geckoella collagalensis*, a rare gecko is also recorded from the Sanctuary.

Avifauna

Chinnar excels in diversity of birds. A series of three bird surveys were conducted during 1998-99. A total of 211 species were reported from the sanctuary during the entire period and the most important observation was the discovery of the peninsular endemic and globally threatened yellow throated bulbul (*Pycnonotus xantholaemus*) which was the first record from Kerala in the 20th century.

(Source: Sightings of Yellow Throated Bulbul from Chinnar Wildlife Sanctuary, J.Praveen and L.Namassivayan, Zoos' Print journal 21(4):2228)

HISTORY OF MANAGEMENT AND PRESENT PRACTICES

3.1. General

Chinnar Reserved Forest was a Section of Marayoor range of Munnar Division and the area was managed as per the Working Plan of Munnar Division. Parts of Chinnar plains were felled during the 70s to raise plantations. These plantations failed and this resulted in scrub open jungle in the Chinnar plains. Some of the upper reaches have been planted with wattle and Eucalyptus.

The area was declared as Sanctuary in 1984 and henceforth strict protection is enforced. The slash and burn cultivation practiced by the tribal people, especially Muthuvans has changed the landscape a lot. After the declaration of the Sanctuary the shifting cultivation of Muthuvans came to an end and they resorted to sedentary agriculture.

A number of enclosures belonging to various agencies existed even while the area was a Reserved Forest. The revenue enclosures at Churulipetti belonging to settlers have been acquired under Project Elephant after Chinnar became a Sanctuary. Presently there is an enclosure at Ollavayal, and also PWD has rights for land at Chinnar.

3.2 Review of Past Management Plans

The First Management Plan for Chinnar Wildlife Sanctuary was from the period 1990-91 to 1999-2000. The objectives of the Plan were:

- a) To maintain and preserve the forest ecosystem of Chinnar Wildlife Sanctuary by minimizing all disruptive factors.
- b) To study the long term succession and evolutionary process in the thorny scrub forest eco system
- c) To study plant animal interactions in the dry forests.
- d) To promote conservation awareness among the local population through nature education programme.
- e) To study plants and trees in relation to multiple uses for humanity.
- f) To ensure maximum protection of special type of flora that thorny scrub forest support and varied fauna which include Grizzled Giant Squirrel and Peacock.

The zonation was specified in the plan but it was vague without clear boundary demarcation. The plan specified the development of Nature education and interpretation with clearly laid out methods to achieve the same. Being the first management plan more emphasis was given to research and monitoring.

The Second Management Plan was prepared for the period between 2002-03 to 2011-2012.

The objectives of the plan were:

- a) To maintain and conserve the diverse habitats and watersheds of the sanctuary
- b) To protect and monitor the long term changes of thorny and riparian vegetation of dry zone.
- c) To conserve the habitat of rare Grizzled Giant Squirrel, Star Tortoise and Yellow Throated Bulbul
- d) To improve and systematize visitor management
- e) To conserve and study endemic medicinal plants and germplasm of wild cultivars through ex situ conservation
- f) To protect sandalwood in the PA
- g) To minimize dependency of tribes on forest resources through eco development and foster positive interaction
- h) To conserve the sites of archeological and anthropological importance
- i) To build capacity of staff and local stakeholders for effective conservation of the PA and to create new models for resource use

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:

- Construction of camp sheds in all locations as specified in the management plan was carried out.
- 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.

- Participatory fire management was strengthened incorporating maximum members from EDC in fire protection activities.
- Sandal protection strategy was developed and implemented.
- Visitor management has been done effectively by forming professional EDC's.
- Website for the PA was launched.
- Nature Camps were organized regularly for imparting awareness especially for school and college students.

Reduction of pressure due to cattle grazing in PA and planting under 220 KV line for providing canopy connectivity to Grizzled Giant Squirrel are the major activities proposed the past management and could not be materialized due to administrative reasons. However, these gaps are again proposed in this plan.

3.3. Timber operations

Felling had taken place in the past along the riverine tract. Sandalwood was being extracted regularly. The matured sandal trees were removed by the Forest Department after marking. Extraction of dead sandal trees was practiced even after declaration as a Sanctuary. The dead and wind fallen timber also were extracted in order to reduce the fire hazard. Now no extraction is being carried out because of the Apex Court order. No timber operations have been carried out during the last plan period.

3.4. Non-wood Forest Produce Collection

There are 11 tribal settlements within the Sanctuary the residents are wholly dependent on the Sanctuary for fire wood and other minor forest produces. The residents of the tribal settlements lying on the periphery of the Sanctuary also depend on the Sanctuary for the same. The tribes collect mainly the following NWFP:

1. Honey
2. Gooseberry (Amla)
3. Eachampullu
4. Poles for construction of houses

The NWFP collection is without any regulatory mechanism and the rights to NWFP under the Forest Rights Act is yet to be settled. The quantity of NWFP collected and removed is not available with the management authorities as there is no regulatory mechanism for the same.

3.5. Leases

No part of National Park is leased out to any organizations/ bodies

3.6. Other programmes and activities

The presence of the 11 settlements inside the sanctuary gives rise to complex management issues. Other agencies and departments like tribal dept.; Panchayats, agricultural dept. etc operate within the sanctuary. An eco development programme was started under the World Bank aided Kerala Forestry Project in 1998.

The eco – development programme is still functioning in the sanctuary but with very limited scope. Eco development committees are formed in all the Eleven Tribal settlements. The activity of the EDC is limited to Participatory Fire Management.

Three professional EDC's were formed for undertaking the Eco – Tourism activities in the Sanctuary. They are Alampetty Tribal Trackers EDC, Chambakkad Tribal Trackers EDC and Eachampetty Tribal Trackers EDC.

3.7. Forest protection

The major issues of Forest Protection related to the Sanctuary are Illegal Felling of Sandal wood trees, Ganja Cultivation and Forest Fires. Also in case of the Settlements where the boundary is not demarcated by construction of cairns/kayyalas there is probability of extension of cultivation area. The chance of encroachment at Njavala Ollavayal area where the Sanctuary shares boundary with Revenue lands is also high as the boundary demarcation at that particular location is vague.

Presently the Sanctuary is under the control of Karimutty Forest Station. Considering the magnitude of problems the present staff strength is insufficient to manage the protection activities.

3.7.1. Forest Plantations

Before the declaration of the Sanctuary Wattle and Eucalyptus plantations were raised in the Upper reaches of the Sanctuary. These plantations were not maintained after the declaration of the Sanctuary.

3.7.2. Legal Status

Chinnar was declared as Wildlife Sanctuary in August 1984 as per notification No. G.O (P) No. 229/84/AD dated 04.08.1984 of the Kerala Government under sub section (1) of Section 18 of the Wildlife (Protection) Act 1972. As per notification the Chinnar Reserve which was notified on 26th May 1942 under *Section* 18 of the Travancore Forest Act of 1068.

The following public and private rights are admitted within the reserve as per the notification.

Private Rights

The following registered holdings and other claims admitted by the Forest settlement officer within the reserve are excluded from the reserve by cutting ring boundaries and are treated as enclosures within the Reserve.

ENCLOSURE NO.1

Pakuthy	Name of the Owner	Sy.No.	Registered or unregistered.	Extent	
				Acre	Cents
Marayoor	Velappa Naicken Ramasway Naken and Kannan Chinnakannan	245/1	Registered	10	85
Total				10	85

BOUNDARY DESCRIPTION

North: Starting from cairn no1 at the north – west corner of the enclosure (at the north-west corner of Survey No. 245/1 of the Marayoor Pakuthy, Devicolam Taluk), the line goes nearly east-north-east along the northern side of the above Survey No. for about 22 ¼ chains passing cairn Nos. 2 to 6 to cairn No.7 at its north-east corner at a theodolite stone (cairn Nos. 2 to 6 are at theodolite stones).

East: Thence along the east side of survey No. 245/1 for about 4 chains to cairn No.8 at a theodolite stone at the south-western corner of Survey No.246/1.

South: Thence nearly west north-west along the southern side of Survey No.245/1 for about 22 chains passing cairn Nos. 9 to 14 to cairn No.15 at the south-west corner of the above Survey No. (Cairn Nos. 9 to 14 are at Theodolite stones).

West: Thence along the western side of a survey No.245/1 for about 3 ¼ chains to cairn No.1 at the starting point.

(This enclosure is acquired by payment of compensation under project elephant during 1995-96)

ENCLOSURE NO.II (OLLAVAYAL)

Pakuthy	Name of the Owner	Sy.No	Sub Dn. No.	Registered or unregistered.	Extent	
					Acre	Cents
Keezhanthur	Chukiri pazhani Muttiyan	302/1	¾	Registered	6	07
-do-	-do-	303/1	¾	-do-	1	77
Total					7	84

BOUNDARY DESCRIPTION

North: Starting from cairn No.1 at the north-west corner of Survey No.302/1/34 of Kilanthur Pakuthy the line goes nearly south-east along the north side of the above survey number for about 12 chains passing cairn Nos. 2 and 3 to cairn No.4 at its north-east corner, thence more or less south along the east side of survey No.302/1/3/4 for about 3 chains to cairn No.5 at the north-west corner of survey No.303/1/3/4, thence along the north side of the above Survey No. for about 4 chains passing cairn No. 6 to cairn No.7 at its north-east corner.

East: Thence nearly south-south-west along the east side of survey No.303/1/3/4 for about 5 chains passing cairn Nos. 8 and 9 to cairn No.10 at the south-east corner of the above Survey No. (cairn No.8 is at a theodolite stone).

South: Thence nearly north-west along the south side of survey Nos. 303/1/3/4 and 302/1/3/4

for about 11 $\frac{3}{4}$ chains passing cairn Nos. 11 to 15 to cairn No.16 (cairn nos. 12 and 15 are at theodolite stones).

West: Thence nearly north-north-west along the west side of survey nos. 302/1/3/4 for about 7 $\frac{1}{4}$ chains passing cairn No.17 to cairn No.18; thence nearly north-east along the west side of the above Survey No. for about 2 $\frac{1}{4}$ chains to cairn No.1 the starting point on the north boundary (cairn No.17 is at a theodolite stone).

ENCLOSURE NO.III

Pakuthy	Name of the Owner	Sy. No.	Registered or unregistered	Extent	
				Acre	Cents
Marayoor	Karuppan Chanthan, Karuppanan, Pazhani, Pazhani, Karuppanan, Pazhanilinkdan, Karupan pazhani, Chuppayan	238/1/3	Registered	2	76

BOUNDARY DESCRIPTION

North: Starting from cairn No. 1 at the theodolite stone at the North-West corner of Survey No.238/1/3 of the Marayur pakuthy the line goes nearly east along the north side of the above survey No. for about 5 $\frac{1}{2}$ chains to cairn No. 2 at its north-east corner at a theodolite stone.

East: Thence along the east side of the same survey No. first nearly south for about 2 chains to cairn No.3 at a theodolite stone and then nearly south – south-west for about 5 $\frac{3}{4}$ chains to cairn No.4 at the theodolite stone at the south-east corner of the Survey No.

South: Thence nearly south-west along the south side of the survey No.2 chain to cairn No.5 at the theodolite stone at the south west corner of the Survey No.

West: Thence nearly north-north-west along the west side of the Survey No. for about 7 $\frac{1}{4}$ chains passing cairn No.6 at a theodolite stone to cairn No.1 at the starting point on the northern boundary.

(This enclosure does not exist as per field conditions)

ENCLOSURE NO IV

Premises and land occupied by the P.W.D coolly line adjoining the eastern side of the northern outlet road at the 35 mile 1st quarter and about 5 chain north-east of the 34th mile stone.

Pakuthy	Name of the Owner	Sy.No.	Registered or unregistered.	Extent	
				Acre	Cents
Marayur	Premises and land occupied by the P.W.D Coolly line.	Portion of 238/1/1	Unregistered	0	50.50

BOUNDARY DESCRIPTION

North: Starting from Cairn No. 1 at the north west corner of the Enclosure, the line goes nearly east for 2 ¼ chains to Cairn No. 2 at its north east corner.

East: Thence nearly south for 2 ¼ chains to cairn No. 3 at its south east corner

South: Thence nearly west for 2 ¼ chains to cairn no. 4 at its south west corner.

West: Thence nearly north for 2 ¼ chains to cairn no. 1 the starting point on the northern boundary

ENCLOSURE NO V

Premises and land occupied by the tothering shed for bulls adjoining the northern outlet road at the 31st Mile 3rd Quarter under the charge of the PWD.

Pakuthy	Name of the Owner	Sy.No.	Registered or unregistered.	Extent	
				Acre	Cents
Marayur	Premises and land occupied by the P.W.D as tothering shed	Portion of 238/1/1	Unregistered	0	50.50

BOUNDARY DESCRIPTION

North: Starting from Cairn No. 1 at the north west corner of the Enclosure, the line goes nearly east for $2\frac{1}{4}$ chains to Cairn No. 2 at its north east corner.

East: Thence nearly west for $2\frac{1}{4}$ chains to cairn No. 3 at its south east corner

West: Thence nearly north for $2\frac{1}{4}$ chains to cairn no. 1 the starting point on the northern boundary

South: Thence nearly west for $2\frac{1}{4}$ chains to cairn no. 4 at its south west corner.

PUBLIC RIGHTS

The following roads and footpaths are also admitted within the Reserve for the use of public and the holders of lands admitted inside the Reserve:-

1. The northern outlet road from 29th Mile 1st Quarter at Cairn No: 54 on the left bank of the Natchimuthu Odai to the Travancore boundary at Chinnar near Cairn No. 25

The total width allowed for the road including all the quarries necessary for the use of the PWD and the space for cutting north for maintenance of the road is 1 chain (66 feet i.e., 33 feet on the upper side and 18 feet for the road way proper, side rains etc and 15 feet on the lower side).

Description: The above road enters the Reserve between cairn nos 53 and 54 at the 29th Mile 1st Quarter on the outer boundary of the Reserve and goes more or less in a north easterly direction for about $8\frac{1}{2}$ miles and leaves the Reserve between cairn nos 25 and 26 on the northern boundary.

2. A ROAD FROM THE EXCISE QUARTERS TO THE PWD CAMPSHED

The length of the road passing through the Reserve is about $20\frac{1}{2}$ chains.

Description: Starting from a point about 170 links east of cairn no. 18 on the outer boundary of the Reserve the road goes first south and then north easterly direction for about $20\frac{1}{2}$ chains and leaves the Reserve between cairn nos 24 and 24 A.

3. THE FOOTPATH STARTING FROM CAIRN NO. 16 OF THE OUTER BOUNDARY AND GOING TO CAIRN NO. 8 OF THE ENCLOSURE NO. I

(This right can be excluded since the enclosure is acquired)

The total length of the footpath is about 130 chains, and the uniform width 5 feet.

Description: Starting from cairn no. 16 of the outer boundary of the Reserve the footpath goes westwards through the Reserve along the southern side of Sy. No: 257/1/1 northern side of Sy. No: 238/1 and southern sides of Sy. Nos. 250/1, 248/1, 247/1, 246/1 and 245/1 for about 130 chains and meets cairn no. 8 at the south east corner of enclosure no. I.

4. THE FOOTPATH LEADING TO ENCLOSURE NO: III

(This right can be excluded as the enclosure does not exist)

The total length of the footpath is about 8 ¼ chains and the uniform width 5 feet.

Description: Starting from cairn no. 72 on the outer boundary of the Reserve the footpath goes in a north easterly direction for about 8 ¼ chains and enters the enclosure no. III at cairn no. 1 at the North West corner of the enclosure.

5. THE FOOTPATH LEADING TO ENCLOSURE NO: II

The total length of the footpath is about 3 chains and the uniform width 5 feet.

Description: Starting from cairn no. 15 on the southern boundary of the enclosure the footpath goes in a south western direction for about 3 chains to Vannanthorai River.

OTHER RIGHTS

1. The rights allowed to Hillmen under rule (rule not legible in the notification available) 4-12-1911 as per Section 60 of the Forest Act are allowed to the headman and members of the hillmen settlements in the Reserve.
2. Government in G.O. (Ms) 642/63 Agri. Dated (date not legible in the notification available) 1963 has ordered to transfer 110 acres of land at Champakad to Harijan Department.

3.7.3. Illegal activities

3.7.3.1. Hunting

There is no history of game hunting

3.7.3.2. Poaching

There have been only two wildlife related cases in the last 5 years, one an attempt to capture and transport a star tortoise and another poaching of a Flying Squirrel. In both these cases

tribes within the sanctuary were involved. There is no serious problem of poaching but strict monitoring of the area need to be carried out.

Table 3: Details of Poaching cases for the period from 2002 to 2011

Sl. No	Date of offence	No. of accused	Description
1	29.10.2009	5	Attempt to capture and transport a star tortoise from Chungum area.
2	27.06.2010	5	Poaching a flying squirrel from Thengamala area.

3.7.3.3. Illegal cutting of trees

The illegal cutting of trees from the sanctuary is related mainly with sandal wood and the same is dealt with separately. The details of illegal cutting of trees other than the sandal wood tree are shown below (Table 4).

Table 4: Details of illegal cutting of trees other than sandal wood for the last 10 years

Sl. No	Date of offence	No. of accused	value of seizures(Rs.)	Loss(Rs.)
1	31.08.2003	3	1500.00	2500.00

3.7.3.4. Sandal Protection

Illegal felling of Sandal wood trees is one of the major problems in the management of the Sanctuary. The presence of Sandal wood trees is attracting smugglers from both inside and outside the state. The tribes from the Tribal settlements within the Sanctuary as well as from the settlements in the periphery of the sanctuary get involved with sandal offences. The major problem in effective protection is the interstate boundary which is used by the smugglers as well as the tribes in and around the sanctuary.

The details of Sandal offences for the past 10 years is given below

Table 5: Details of Sandal Offences for the past 10 years

YEAR	No. of case booked	Thondy Seized Sandal wood (kg)	Particulars of Vehicle seized, if any	Approximate value of materials seized (Rs.)
2002	47	5786.00	9	1691400
2003	29	3006.00	4	1062600
2004	27	2202.00	5	812800
2005	33	1902.00	1	599800
2006	14	431.00	1	148800
2007	08	98.00	0	64000
2008	18	207.00	0	207000
2009	21	749.00	1	617200
2010	18	122.75.00	1	300500
2011	12	51.00	0	102000

Sandal Enumeration Details

For better management and protection the sandal regeneration area is divided into 5 blocks, namely Alampetty Block- I, Alampetty Block- II, Karimutty Block-I, Karimutty Block-II, Palapetty and Vannamthura Block. Sandal enumeration was conducted for the first time in 2001. There were a total number of 4116 trees enumerated that were having a GBH of 30 cm at that time. Sandal regeneration is found profusely in an area of about 343.1 hectors. As per the enumeration conducted on February 2008 there were 4183 trees having GBH more than 30 cm. Of it 12 trees which was situated in the IB compound of Marayoor was transferred to Marayoor range on 06.03.2009.

A re- enumeration of sandal trees in Chinnar Wildlife Sanctuary was conducted during 2011 and was completed by December 2011. The details of the same are incorporated in the table below.

Table 6: Abstract of Sandal Enumeration conducted on 2011

		Alampetty Block- I	Alampetty Block- II	Karimutty Block-I	Karimutty Block- II	Palapetty & Vannamthura	Total
1	Area of the block (in Ha)	7.700	85.000	79.300	29.100	142.000	343.100
2	Periphery (in Km)	1.500	7.000	7.600	3.100	11.000	30.200
3	Enumerated on 2008 Feb	244	2254	574	352	747	4809
4	Enumerated on 2010 (Palapetty Settlement)					638	
5	Lost in Forest Offence between 2008 Feb and 2011 Dec	0	22	22	11	15	70
6	Old trees enumerated on 2011 December	244	2232	552	341	1370	4739
7	Newly Enumerated on 2011 December	35	32	12	37	130	246
8	Present No. of Trees	279	2264	564	378	1500	4985

Protection strategy including protection units, No. of watchers etc

Sandal Regeneration Blocks

For an easy and effective sandal protection the sandal regeneration area is surveyed and divided into various blocks. The tree located in each block is enumerated and the sandal enumeration register is maintained. All changes caused due to offences are incorporated in the register then and there itself.

Protection camps

Protection camps are conducted regularly in all the sandal regeneration blocks. In addition protection camps are conducted at the interstate boundary area such as Chungam and Churulipetty too. The details of the protection camp are explained below.

Table 7: Details of protection camps

Sl. No	Name of camp	Area covered	Sandal Block	No. of staff and watchers
1.	Vannamthura	Vannamthura Puthuvettu kalkinar	Palapetty - Vannamthura	Forester- 1 Forest Guard – 2 Watchers- 10
2.	Palapetty	Palapetty	Palapetty -	Forest Guard – 2

		Indankadu Pullukadu Anakkunnu	Vannamthura	Watchers- 12
3.	Alampetty	Alampetty Jallimala Karimutty	Karimutty- I&II	Forester- 1 Forest Guard – 3 Watchers- 14
4.	Vazhathura	Alampetty Jallimala Karimutty	Alampetty-I&II	Forester- 1 Forest Guard – 3 Watchers- 16
5.	Churulipetty /Chinnar	Churulipetty Karimala	Interstate	Forester- 1 Forest Guard – 3 Watchers- 6
6.	Chungam	Chungam Thenakkadu	Interstate	Watcher- 2

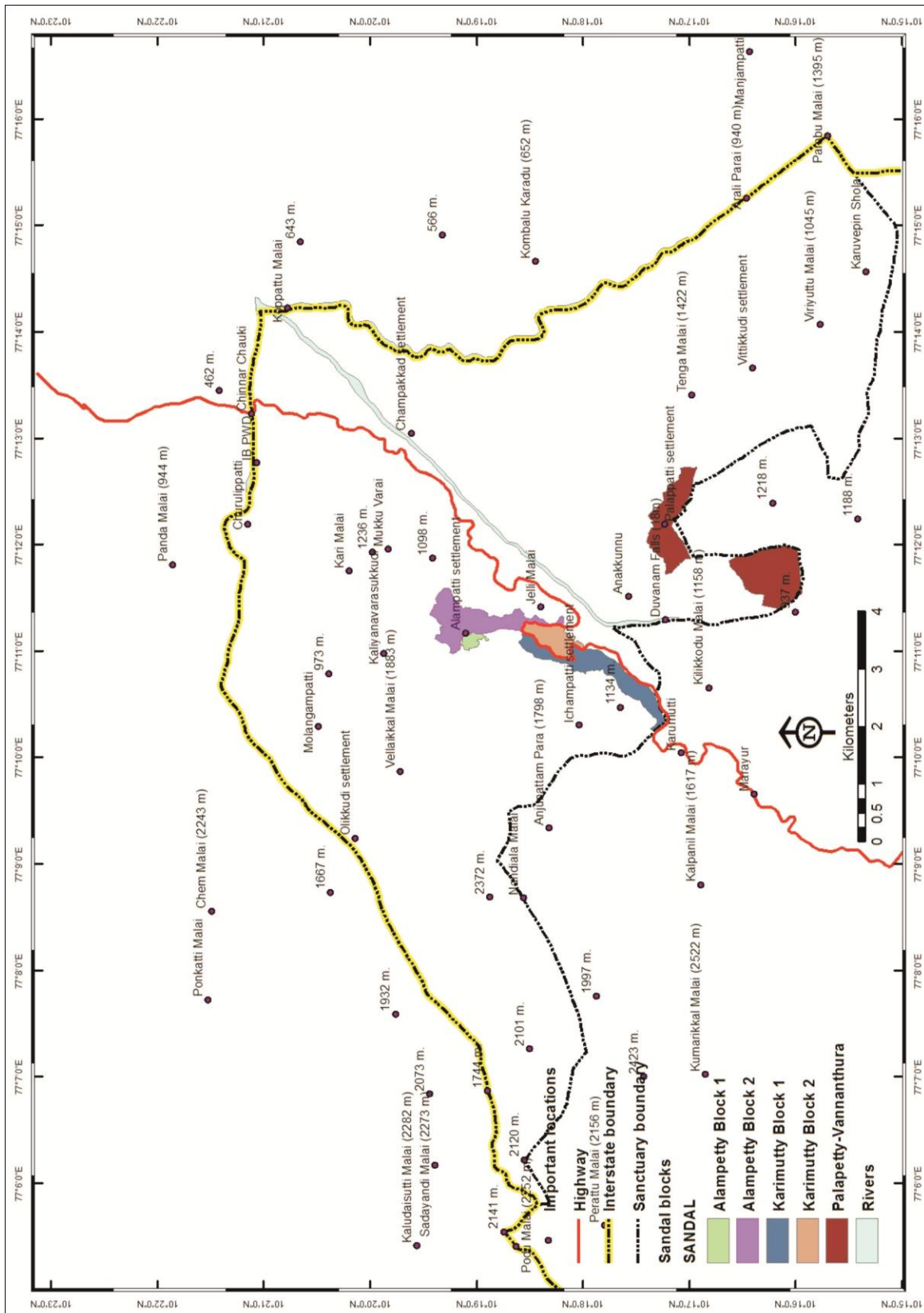
Patrolling during day and night hours are conducted regularly in the above said areas. Apart from regular field perambulation road patrolling is also conducted during day and night hours. In addition the border check post functioning at Chinnar is also vigilant round the clock. All the vehicles coming in an out of the sanctuary is checked properly. A checking station also functions at Karimutty from 6 pm to 6 am.

3.7.3.5 Illegal removal of NWFP

NWFP is collected mainly by the Tribes settled within the Sanctuary. The main products include Fire wood, Honey, Gooseberry etc. Collection of NWFP by persons other than tribes of the sanctuary has not been observed. The quantity of materials collected by the tribes has not been studied

3.7.3.6. Ganja cultivation

There have been instances of Ganja cultivation in the past as some of the remote areas are vulnerable to ganja cultivation that calls for constant vigil on the part of Park management. The areas susceptible to Ganja Cultivation are Pothadi, Olikkudy, Puthukkudi, Eruttalakudy, Mangappara, Koymanchola, Kariveppinchola etc. There has to continuous monitoring of these areas to prevent instances on ganja cultivation.



The details of ganja raid conducted during the past 3 years are given below.

Table 8: Details of Ganja raid conducted during 2009 - 2011

YEAR	No. of raids conducted	No. of ganja plants destroyed
2009	30	10,846
2010	23	1,860
2011	20	7,20

3.7.3.7. Encroachment

The boundary is vague in Njavala – Ollavayal area. The status of the land occupied by non tribes at Njavala is uncertain. The land rights and resource rights under the Tribal Rights Act are pending settlement in 8 tribal settlements.

3.7.3.8. Live stock grazing

Livestock belonging to the tribes in the settlements, graze inside the Sanctuary. Apart from this, cattle and goats belonging to outside settlements like Karimutty, Puravayal, Vannamthura etc. also graze inside. Agencies like the Panchayat supply cattle to the settlements and cattle are considered by the tribes as a dependable source of income in times of emergency. Sale of cattle brings in immediate returns without any investment. Cattle from outside are not properly controlled at present because there is no infrastructure like cattle pound to implement the provisions of the cattle trespass act. There is marked degradation of the forests surrounding the hamlets with high level of cattle pressure. No study has been done to assess and quantify the impact of grazing on the ecosystem as a whole. The presence of cattle distributed all over the Sanctuary is a potential threat for outbreak of diseases like foot and mouth, anthrax etc. Vaccination of Cattle against FMD is conducted every year with the support of the Animal Husbandry department but to a limited success due to the non co-operation of tribes.

3.7.4. Wild fires

As Chinnar has a different pattern of rainfall, the fire season does not correspond to areas elsewhere. The dry season extends well into the south west monsoon period in most of the

areas other than the montane vegetation of the high altitude zones. The current practice involves total protection from fire by taking fire lines and engaging fire protection mazdoors. Fire protection has to be done from February to August, in the lower reaches of the Sanctuary taking in to consideration the climatic conditions prevailing. There is involvement of EDC's in fire protection activities. Fire management plans are prepared by the EDC's and protection activities in areas adjoining to each tribal settlement is entrusted to that particular EDC. Fire gangs are engaged exclusively from among the tribes only.

Table 9: Details of forest fire occurrence for the past 5 years

Date of Occurrence of fire	Location			Extent
	Name	Longitude	Latitude	
01.03.2009	Puthukudy (Agricultural land of tribes)			2 ha
21.03.2010	Ollavayal			4 ha
30.03.2011	Vanchikulam	10.31917	10.31917	5 ha
08.05.2011	Thengamala	10.27781	77.22105	25 ha
20.08.2011	Therumala	10.32482	77.16296	10 ha

3.7.5. Insect attacks and pathological problems

Insect attacks and pathological problems are not reported

3.7.6. Wildlife Health

The presence of cattle on the fringes poses the threat of outbreak of foot and mouth disease and other communicable diseases. The tribal settlements have large number of cattle and all this could be a potential threat to the Sanctuary. The mules used for transportation of goods may also cause communicable diseases to wildlife.

3.7.7. Inter agency Programs and Problems:

Due to the presence of 11 hamlets inside the Sanctuary, the PA has a history of other developmental agencies operating inside. The District, Block and Grama Panchayats operate independently within the hamlets. There are 2 Grama Panchayats having jurisdictions over the PA. Their planning is done independently and this creates friction during implementation period. Other agencies like Tribal Dept. and Agriculture Dept. also act independently. Social

service organizations also operate. At present, there is no system for integrating and dovetailing the activities of different agencies.

3.8. Eco-tourism

The eco tourism activities were initiated in the PA during 2002-03. The programmes offered as part of eco – tourism include trekking programmes and night halt programmes. These programmes are operated by professional EDC groups which were formed from the tribal EDC's exclusively for eco tourism operations. The programmes are designed and operated so as to reduce stake holder pressure on the Protected Area by providing alternate employment to dependent community members. It is also designed to provide for presence of protection personnel in sensitive areas as a deterrent to offences.

Presently three Professional EDC groups are functioning in the PA. They are Champakkad Tribal Trekkers EDC, Eachampetty TTEDC and Alampetty TTEDC.

Eco tourism activities are operated from two points, at Chinnar which is the entry point to the sanctuary from the Tamilnadu side and at Alampetty about 8 Km from Marayoor Town. The programmes offered at Chinnar includes visit to watch tower, river side trekking along Chinnar river, Trekking to Churulipetty and night halt at tree top machans and log houses. At Alampetty trekking to Thoovanam water falls and stay at log houses are offered as part of eco tourism activities.

Infrastructure for Eco – tourism activities:

1. IB and dormitory at Chinnar.
2. Amenity centre at Chinnar – functions as dormitory, refreshment centre, information centre etc.
3. Log houses at Kottar, Churulipetty, Pambar, Thoovanam
4. Tree top machan at Karakkad, Kottar
5. Vasyapara camp shed.

The programme is functioning in a benefit sharing manner. The salaries to the guides are based on the income generated through the various activities. A part of the income is set aside for community development activities.

The tribes functioning as guides were given a basic training during the initial stages of the programme. Apart from that their only training is limited to exposure from visits to other eco tourism centers within the state. The knowledge and skill level of the guides need to be improved by providing suitable training so that they along with earning their livelihood can act as messengers of nature conservation and impart nature awareness to visitors.

3.8.1. Visitor Management

Information providing mechanisms are functioning at the Wildlife Warden's office at Munnar and the Asst. Wildlife Warden's office at Marayoor. EDC offices function at Chinnar and Alampetty to provide necessary help to the visitors. The number of visitors to the PA is not in a very large scale. The visitors are including a few numbers of foreigners as well. The details of visitors and income generated during the past years are given below:

Table 10: Details of Visitors and income generated from eco tourism activities

Year	No. of Visitors		Govt. Revenue	EDC income
	Indians	Foreigners		
2002 - 03	219	76	6130	19700
2003 - 04	2599	707	68156	230060
2004 - 05	2890	1016	84170	307125
2005 - 06	2211	1158	91940	323835
2006 - 07	3233	1563	112840	444695
2007 - 08	5120	2723	150640	527712
2008 - 09	5889	2270	194485	1104420
2009 - 10	5860	2085	190215	1192495
2010 - 11	8335	2345	247710	1545885

3.8.2. Conservation Education

As a part of conservation education, Nature Camps are conducted regularly for School/College Students and for NGO's. The nature camps are organized in the Nature Education Centre at Chinnar. The centre is equipped with generator, LCD Projector, Television, DVD Player etc. There is lack of trained personals for imparting nature education. Presently the nature education sessions are conducted by the staff of the PA.

Table 11: Details of Nature Camps Conducted in Chinnar

Year	No. of Nature Camps	No. of Participants
2004 - 05	58	1860
2005 - 06	43	1696
2006 – 07	18	774
2007 – 08	42	1286
2008 – 09	36	1320
2009 – 10	37	1515
2010 - 11	34	1344

A nature education interpretation centre is functioning at Karimutty, near the entrance of the Sanctuary. But the centre is not yet completed. This facility has to be developed during this plan period.

3.9. Research, monitoring and training

3.9.1. Research & monitoring

Various studies have been carried out in Chinnar Wildlife Sanctuary. Most of the studies focus on ecological aspects. The studies were conducted on subjects like the Flora of the Sanctuary, natural salt licks of the area, plant diversity, habitat utilization of larger mammals (Jayson and Ramachandran, 1996) etc. Studies were also done on the cropping systems of the tribes, social-ethno botanical aspects (Nair, K.K.N and R.Jayakymar, 1998, 1999) etc. Some of these studies revealed the occurrence of rare and endangered fauna and flora like starred tortoise, saw scaled viper, rusty spotted cat, *Albizia lathamii* etc.

Continuous monitoring of flora and fauna has to be done and the same shall be incorporated in the plan.

3.9.2. Training

The staffs of the PA area are not provided any specialized training. The front line staffs receive general forestry training from forest schools. The staffs are not provided any specialized training in wildlife management and eco development which forms the key activity of the PA. Occasional study tours and one day/ two day workshops are conducted in a limited manner. Absence of any specialized training for the front line staff reduces their efficiency. The daily waged watchers who play a significant role in protection and management of the PA lack training.

3.9.3. Census

Tiger census, Elephant census and wildlife census are conducted along with the other forest areas of the State. The following data are appended in tables for reference. The data is for Munnar Wildlife Division as a whole and hence applicable to Chinnar Wildlife Sanctuary as well.

1. Population estimation of major mammals in the Forests of Kerala conducted in 1997 by Kerala Forest Department and Kerala Forest Research Institute

Species	No. sighted	Density (sq.km)	% CV	Dung / pellet Density (sq.km)	Elephant Density (sq.km)
Bonnet Macaque	48	1.22	78.72		
Common Langur	28	0.71	47.03		
Elephant	48	1.22	53.35	967.18	0.225
Guar	18	2.82	49.78		
Sambar	14	0.36	58.43		
Spotted Deer	49	1.24	65.8		
Barking Deer	5	0.13	33.43		
Mouse Deer				371.08	
Wild boar	17	0.43	74.3		
Malabar giant squirrel	5	0.13	43.44		
Porcupine				753.28	
Common palm Civet				646.62	
Sloth bear				28.89	

2. Population estimation of major mammals in the Forests of Kerala conducted in 2002 by Kerala Forest Department and Kerala Forest Research Institute

Species	Density/Sq.Km	Method
Elephant	0.29	Block Count
Gaur	0.45	
Sambar	0.11	
Spotted Deer	0.43	
Wild boar	0.75	
Malabar Giant Squirrel	0.03	

Table 12: Population estimation of Major Mammals in Forests of Kerala

- j) Population estimation of Wild Elephants in the Elephant reserves of Kerala conducted by Kerala Forest Department, Periyar Foundation and Kerala Forest Research Institute

Year	Density/Sq.Km	Method
2005	1.14	Dung Count
2007	0.52	
2010	0.72	

Table 13: Details of Elephant Census

3.10. Wildlife conservation strategies & evaluation

The strategy of conservation is firmly based on protection especially focusing on sandalwood. The eco development programme has created better relationship with the communities, but this has not been effectively built into the protection network. Because of the imperatives of protection, other activities like nature education, eco development, monitoring etc. are lagging behind.

Fire protection is given high importance considering that Scrub jungle and dry deciduous forest constitute nearly fifty percent of the sanctuary area. Eco – development committees play an important role in fire prevention and protection.

There is no institutional arrangement to monitor the implementation of the Management Plan and to evaluate the impacts of management.

3.11. Administrative set up

Chinnar Wildlife Sanctuary is one Range of Munnar Wildlife Division, with Headquarters at Munnar which is 60km from Chinnar, the major centre of the Sanctuary. The office of the Assistant Wildlife Warden is at Marayoor. The Sanctuary has staff strength of One Deputy Ranger, Three Foresters, Sixteen Forest Guards and one Driver. Additionally, watchers on daily wages are engaged for various purposes like protection, monitoring, fire control etc. At present the entire Sanctuary is under one forest station, which is located at Karimutty. There is no separate staff for eco development apart from a social worker temporarily engaged for that purpose. Presently Kambakkallu Forest Station, which comes under Kurinjimala Sanctuary, is under the administrative control of the Chinnar Wildlife Sanctuary. The staff of the Kambakallu Forest Station is deputed on working arrangement to Chinnar to assist in management of the PA.

TABLE 14: Staff Strength in Chinnar Wildlife Sanctuary

SL.NO	CATEGORY	SANCTIONED STRENGTH	STAFF IN POSITION
1	Assistant Wildlife Warden	1	1
2	Deputy Ranger	2	2
3	Forester	7	7
4	Forest Guards	32	26
5	Clerk	1	1
6	Peon	1	1
7	Driver	1	1

3.12. Infrastructure facilities

Table 15: Infrastructure Facilities

Buildings		
Sl. No	Name of Building	Remarks
1	Type II duplex at Marayoor	Functioning as Range Office & accommodation for office staff
2	Type II Qtrs at Marayoor	Accommodation for Asst. Wildlife Warden
3	Type II Qtrs at Chinnar	Accommodation for Forester
4	Type II duplex at Chinnar	Accommodation for Check post staff
5	Type II duplex at Chinnar	Accommodation for Lady watchers and Forest Guard
6	Type II duplex at Chinnar	Keeping as store room for forestry work equipments.
7	Information centre cum Cell building at Chinnar	Functioning as cell room and accommodation for check post watcher & Dormitory watcher
8	Old office building at Chinnar	Unused
9	Old check post building at Chinnar	Functioning as Chambakkadu TTEDC office
10	Inspection Bungalow at Chinnar with all furniture and utensils.	Functioning
11	Dormitory at Chinnar with all furniture and utensils.	Functioning
12	Check post building with cross bar at Chinnar	Functioning
13	Thondy room at Chinnar	Functioning
14	Fabricated Watch Tower at Chinnar	Functioning
15	Fire Watch Tower at Jallimala	with Alampetty TTEDC
16	Nature Education centre at Chinnar	Functioning
17	Anti poaching building at Chungam	for protection camp

18	Steel fabricated shed at Karimala	for protection camp
19	Steel fabricated shed at Thengamala	for protection camp
20	Anti poaching building at Vannamthura	for protection camp
21	Anti poaching building at Alampetty	for protection camp
22	Steel fabricated shed at Vazhathura	for protection camp
23	Anti poaching building at Palappetty	for protection camp
24	Anti poaching building at Kannimar	for protection camp
25	Anti poaching building at Kovilpara	for protection camp
26	Anti poaching building at Aralippara	for protection camp
27	Anti poaching building at Vasyapara	for protection camp
28	Anti poaching building at Periyamala	for protection camp
29	Anti poaching building at Periyacombu	for protection camp
30	Log house at Churulipetty	with Chambakkadu TTEDC
31	Log house at Koottar	with Chambakkadu TTEDC
32	Log house at Thoovanam	with Alampetty TTEDC
33	Amenity center at Chinnar	with Chambakkadu TTEDC
34	Old Guard station building (tiled roof)	Accommodation for Station staff, Karimutty
35	Old Forest station building (concrete)	Accommodation for Deputy Ranger, Karimutty
36	Forest station building, Karimutty	Functioning
37	Interpretation center Karimutty with all displays	Functioning
38	Fabricated check post and cross bar at Karimutty	Functioning

Table 16: List of Arms

Arms and ammunition		
Sl. No.	Type of Arm	No.
1.	Revolver	1
2.	0.315 Rifle	3
3.	0.303 Rifle	1

Table 17: Wireless sets and walkie talkies

Wireless sets and walkie talkies		
Sl. No.	Type of Arm	No.
1.	Wireless set	8 Nos
2.	Walkie Talkies	20 Nos

There is a total length of 74 km of trek paths as given in Table below.

Table 18: List of Trek paths maintained

List of Trekpaths	
Name	Length (Km)
Champakkadu to Thoovanam	10
Palapetty to Mangappara	8
Anjunattumpara to Olikkudy	5
Karimutty to vazhathura	8
Pazhayakudithara to Anakkatti	10.8
Chungum to Mangappara	7.4
Vellakkal to Pothumala	9
Karimutty to Thoovanam	2.8
Njandalamala to Koymanchola	3
Koottar to Churulipetty	7
Alampetty to Thoovanam	3

3.13. Communication

The Sanctuary is located 42 km away from Munnar. The head quarters of the Sanctuary at Marayoor and the Wildlife Warden's office are having both telephonic, wireless and internet facilities. Sim cards are issued to all staff of the PA from Guards to Assistant Wildlife Warden. Mobile connectivity is available in Karimuttu region. In Alampetty, Palapetty, Vannanthura areas of the sanctuary stable connectivity is not available at present. In Chinnar area mobile phone connectivity is presently not available. A wireless local loop phone is presently made available to EDC office in Chinnar to facilitate tourism activities. At the present situation wireless communication network is highly essential for effective protection of the area. The Forest Station at Karimuttu and Check post at Chinnar are having wireless communication facilities. The wireless tower at Pachapullu facilitates the communication with the field. The sanctuary is having its own website www.chinnar.org.

POSTAL ADDRESS

Wildlife Warden

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3.14. Summary of threats to wildlife

Sandal wood smuggling is a major problem faced by the PA. The entire resources and man power is spent on tackling this issue. The presence of tribal hamlets within the sanctuary and the open interstate boundary poses difficulty in tackling this issue. Only if this issue is tackled effectively the resources and man power can be utilized for other management activities in an efficient manner.

Collection of NWFP especially firewood is a major problem with the sanctuary. The tribes depend on firewood collection not only for domestic needs but also for distillation of lemon grass oil. This practice leads degradation of forest area near to tribal settlements.

The vagueness in the boundary at Njavala - Ollavayal is a major issue. The present status, of land occupied by non tribes at Njavala is not clear. This issue has been mentioned in the previous plan too, but much progress was not achieved in demarcating the boundary at this area.

Cattle grazing is a major management issue. The tribes in all the eleven settlements rear cattle and goat. This leads to degradation of vegetation.

The developmental impacts are mainly due to widening of PWD road resulting in restriction to animal movement.

THE PROTECTED AREA AND THE INTERFACE LAND USE SITUATION

4.1. The existing situation in the zone of influence

There are 11 settlements within the Sanctuary, of which 7 belongs to Muthuvans and the rest to Hill Pulayas. The two tribal communities - Muthuvans and Hill Pulayas differ from one another in social, cultural and anthropological aspects. Eco – development committees are functioning in all the Eleven Tribal Settlements.

The Muthuvans practiced shifting cultivation till a decade ago but after 1984 when the Wildlife Sanctuary came into existence, they were forced to take to sedentary agriculture. Lemon grass cultivation is the prominent livelihood option for the Muthuvan Tribes. Apart from lemon grass cultivation they cultivate vegetables, Ragi etc but these are for own use only and not for sale. Muthuvan settlements in the Sanctuary are located mostly in the difficult terrain and relatively higher rainfall zones. They also used to indulge in Ganja cultivation. Continuous and strict monitoring of the areas has reduced the incidence of Ganja Cultivation.

Hill Pulayas are found only in the Idukki District in Kerala. They are part of the larger population of Hill Pulayas in Palani hills. They are also called Kurumba Pulaya, Karaivazhi Pulaya and Pambar Pulaya. Although Tamil speaking, the Hill Pulayas of Chinnar are well versed in Malayalam too. Hill Pulayas are believed to be a warrior community that migrated to forested regions following the losses in some ancient wars. They were basically a hunter-gather community possessing rich folklore on landscape, vegetation, animals and other local resources. Hunting-gathering activities not only helped them to acquire knowledge on spatial and temporal distribution of resources but also helped them to accumulate good amount of knowledge on landscape and other resource.

Hill Pulayas of Chinnar work as wage labours in and around Marayoor. They practice agriculture in a very limited manner. Their main occupation is Goat and cattle rearing. Though forbidden by Sanctuary rules, it is still widely practiced. Majority of the daily waged watchers employed with

the Forest Department also belongs to this community. After the initiation of Eco – tourism activities few number of Hill Pulaya Tribes are also engaged as guides in tourism activities. About 43 persons are working as guides in eco –tourism activities.

Ethno botanical Observations:

Of the total 141 species recorded to be ethnobotanically important, 57 taxa are those used exclusively by Hill Pulayas and 27 taxa are those related to the traditional life of Muthuvans. At present tubers of *Asparagus racemosus*, *Dioscorea sp.*, stem and leaves of *Boerhaavia diffusa*, *Cassia alata*, *Cleome viscosa*, *Cleome monophylla* and fruits of *Canthium caromandelicum*, *Ficus recemosa*, *Garacinia gummi-gutta*, *Grewia tiliaefolia*, *Memecylon umbelletum*, *Mitrephora heyneana*, *Opuntia dillenii*, *Solanum torum*, etc. are collected for food or marketed by the Hill Pulayas. The removal of firewood of species like *Albizia odoratissima*, *Hardwickia binata*, *Ixorapavetta*, *Catunaregam spinosa*, *Anogeissus latifolia*, *Cordia gharaf*, *Diospyros ebenum*, *D. ovalifolia*, *Hopea parviflora* etc. for domestic purpose and for distillation of lemongrass oil has negative impact on the natural flora of the area.

The details of settlements in Chinnar Wildlife Sanctuary are given in Table below.

Table 19: Details of Tribal Settlements

Settlement	Name of Tribe	Name of Village	Name of Panchayat	Area of settlement in GPS (Ha)	No. of families	Population		
						Male	Female	Total
Alampetty	Hill pulaya	Marayoor	Marayoor	85.120	54	78	93	171
Eachampetty		Marayoor	Marayoor	69.901	50	87	80	167
Palapetty		Keezhanthoor	Kanthalloor	116.200	61	116	121	237
Chambakkad		Keezhanthoor	Kanthalloor	16.310	54	91	101	237
Total				287.531	219	372	395	812
Vellakkalkudy	Muthuvans	Marayoor	Marayoor	55.870	37	70	79	149
Mangapara		Keezhanthoor	Kanthalloor	54.000	8	19	10	29
Ollavayal		Keezhanthoor	Kanthalloor	65.860	72	122	110	232
Thayannankudy		Marayoor	Marayoor	17.940	23	43	37	80
Olikudy		Marayoor	Marayoor	308.500	28	50	49	99
Puthukudy		Marayoor	Marayoor	85.490	41	75	68	143
Iruttalakudy		Marayoor	Marayoor	124.500	56	123	113	191
Total				712.160	265	502	466	923
Grand total				999.691	484	874	861	1735

4.1.1. PA People Mutual impact

Being inside the forests, the 11 settlements have significant impact on the forests around and vice versa. After the declaration of the sanctuary tribals have taken up sedentary agriculture, but there is no serious restraint on the activities of the people in terms of meeting their necessities like firewood collection, cattle grazing, NWFP collection etc.

Lemon grass cultivation still remains the major source of income and this is a great strain on available biomass. The collection of NWFP is not always sustainable and at times positively destructive as the mango collection from the riverine forests that harbour the highly endangered Grizzled Giant Squirrel. There is intense grazing pressure on the dry forests around settlements leading to degradation of forests and soil.

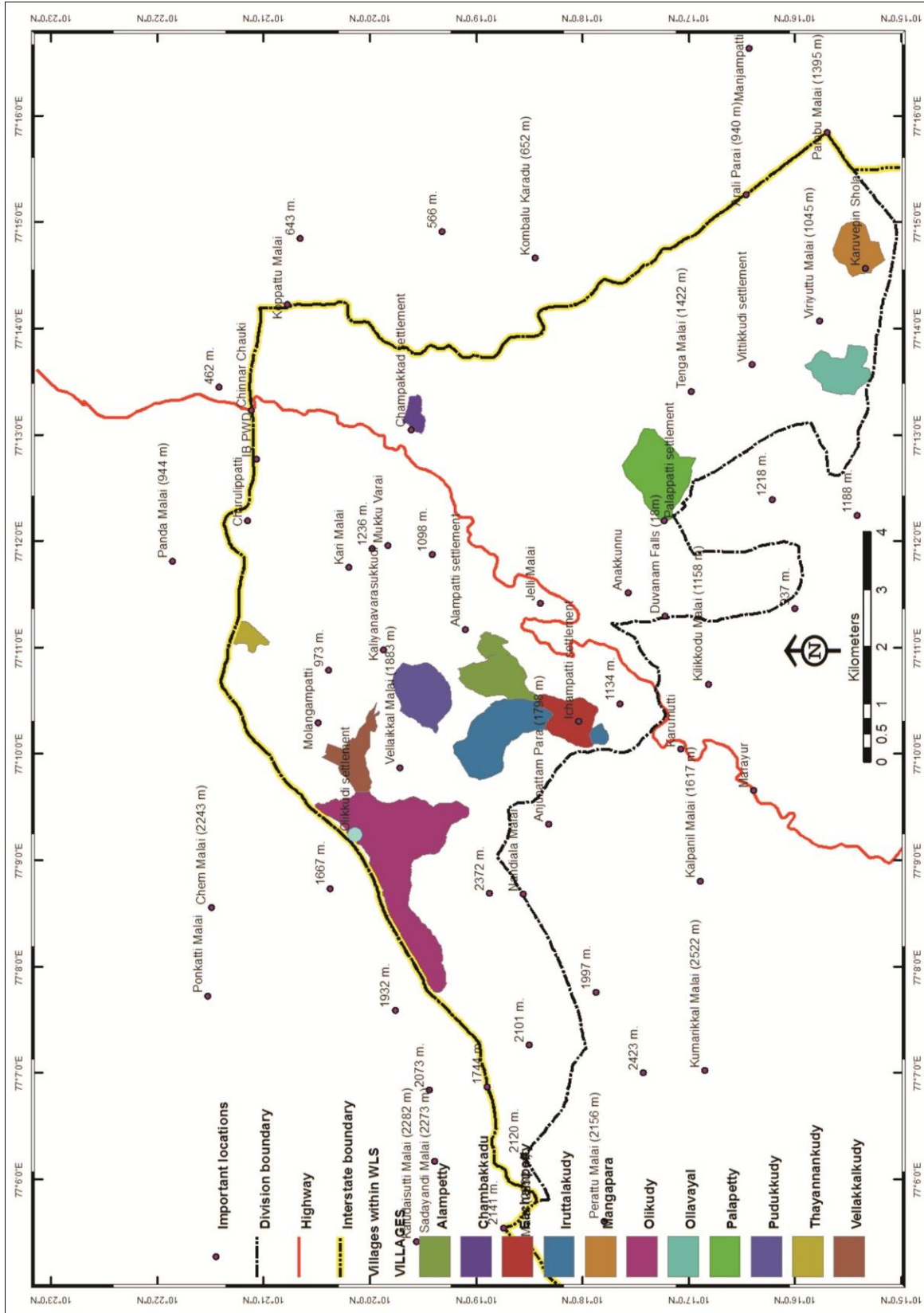
Other settlements outside the PA are also exerting pressure on forests. They graze cattle inside the PA. There is one nontribal settlement namely Njavala within the PA on the periphery and its impact is yet to be assessed. Also the status of this settlement remains vague. People from the forest villages of Talinji and Manjampatti in Tamil Nadu use the PA routes for movements and transport of provisions on mule backs as these routes provide easier means of access.

Due to the awareness activities of eco development and support to agriculture, there is reduction in dependency. But this may not be to the desired extent. Several activities had been taken up as part of eco development activities like providing seedlings of firewood species, supply of Gas connection to few house holds in Chambakkad Settlement etc.

4.2. The development programmes and conservation issues

4.2.1. An evaluation of Government and nongovernmental agencies

Different government and non-government agencies operate in all the settlements inside the Sanctuary. The activities of other agencies are at present planned and carried out without the knowledge or permission of Forest Department. The appropriateness of the activities in the context of PA is to be ensured for which better inter sectoral co-ordination is needed.



Map. 9 Tribal Settlements of Chinnar Wildlife Sanctuary

The lack of co- ordination between different agencies leads to paradoxical situations like proliferation of cattle inside the PA, legally and ecologically un implementable development schemes prepared by the local bodies etc. The main road that passes through the PA is under the control of the PWD and activities like widening the road, would lead to problems like impeding animal movements across the road. The 220kv line has already fragmented the riverine habitat of the Grizzled Giant Squirrel and the undergrowth clearance will stop the regeneration from coming up. Investigation for a power project at Marayoor, using the water from Pambar, still goes on.

4.2.2. The interplay of market forces and their impact

For the people inside the PA, Marayoor controls their economic life as they sell their products and buy necessities from Marayoor. The long existing exploitative relationship leading to debt trap still continues. The cropping system followed by the tribes gives pre dominant importance to cultivation of lemon grass rather than to cultivation of food crops. This practice is due to various reasons like scarcity of water, low fertility of the soil, presence of wild animals etc. This practice has led to lack of food security and the tribes need to depend on the local merchants to meet their needs. Thus they are engulfed in a long lasting dept trap.

The eco development programme was initiated for reducing the dependency of people on PA resources by providing them financial and technical assistance for alternate means of livelihood. This objective is still not achieved. The intervention of EDC's in the aspect of protecting the interests of tribes is very limited. The present activity ends up in providing loans to tribals with little or no effort in re – coupling the amount provided as loan. Hence PFM and eco development activities needs a re-look and are to be revamped.

4.2.3. Eco development initiatives

All the 11 tribal settlements within the Sanctuary were brought under Eco development project under the Kerala Forestry Project. The EDC's are functioning even after the end of the project. But no major activity is being initiated by the EDC's. Community support programmes are run with the Community Development Fund received from the Anaimudi Forest Development Agency, to which the EDC's in Chinnar Wildlife Sanctuary are affiliated.

In addition to the tribal EDC's three Professional EDC's namely Champakkad TTEDC, Alampetty TTEDC and Eachampetty TTEDC are functioning. The Eco – Tourism activities in the protected area are operated by these committees.

The major involvement of the EDC's is seen in Fire Protection activities. A contribution is received by each EDC as Community Development Fund from Anaimudi FDA every year. This amount is utilised to provide loans to EDC members for income generating activities. Apart from these and the eco tourism initiatives no major activity is taken up by the EDC's.

There are several reasons for the set back faced by eco development activities which can be identified as follows:

1. Lack of dedicated staff trained in eco development activities.
2. A team could not operate exclusively for eco development. Eco development programme was just another part of routine duty.
3. Lack of monitoring mechanism regarding the implementation of activities as specified in the micro plan of EDC's.

Considering the various reasons for the lethargy in the activity of Eco Development Committee new strategies are formulated in this plan.

4.2.4 Implementation of Forest Rights Act.

The protected area has 11 tribal settlements and the implementation of Forest Right act has serious implications on the management of the sanctuary. Hence this has to be monitored in an efficient manner. The present stage of implementation of Forest Right Act is given below.

Settlement	Name of Tribe	Status of implementation of FRA	Status of Boundaries
Alampetty	Hill pulaya	Survey completed rights issued to families	Agricultural lands are demarcated by constructing cairns. But the human habitation area is not demarcated.
Eachampetty		Survey completed and rights issued to families	Well demarcated by construction of cairns
Palapetty		Survey completed. Rights not issued as decision has to be taken regarding the Sandal trees within the settlement.	Well demarcated by construction of cairns
Chambakkad		Survey completed and rights issued to families	Well demarcated by construction of cairns
Vellakkalkudy	Muthuvans	Survey not done due to the demand from the tribes that instead of individual rights the entire settlement has to be surveyed and demarcated.	Area is partially demarcated
Mangapara		Survey not done	Not demarcated
Ollavayal		Survey not done due to the demand from the tribes that instead of individual rights the entire settlement has to be surveyed and demarcated.	This settlement has extended well beyond the cairns constructed.
Thayannankudy		Survey of the Settlement completed. Rights were not accepted by the people as they demanded more land.	Human habitation area at Thayannankudi is completely demarcated by construction of cairns. The cultivation lies in Mulangamutti area close to vellakkalkudi.
Olikudy		Survey not done due to the demand from the tribes that instead of individual rights the entire settlement has to be surveyed and demarcated.	Area is not fully demarcated
Puthukudy		Survey not done due to the demand from the tribes that instead of individual rights the entire settlement has to be surveyed and demarcated.	Area is well demarcated
Iruttalakudy		Survey not done due to the demand from the tribes that instead of individual rights the entire settlement has to be surveyed and demarcated.	Settlement area and agricultural fields are separate. The area is well demarcated.

PART II
PROPOSED
MANAGEMENT

Vision

“Conservation of unique biodiversity with all its ecological, anthropological and archaeological richness managed with the help of the local community”

PLAN OBJECTIVES AND PROBLEMS

5.1 Objectives

1. Conserve and maintain diverse habitat and rich biological diversity with special emphasis on rare, endangered, threatened and endemic species in the unique thorny and riparian forest ecosystems.
2. Maintain and improve the watersheds of the Wildlife Sanctuary
3. Conserve and maintain the endemic medicinal plants and germplasm of wild cultivars especially of the dry areas
4. Protect the sites of archeological and anthropological importance
5. Promote environmental conservation awareness
6. Facilitate nature-based regulated tourism and visitor management
7. Strengthen People-PA interface

5.2 Problems in Achieving Objectives

Objective – 1: Conserve and maintain diverse habitat and rich biological diversity with special emphasis on rare, endangered, threatened and endemic species in the unique thorny and riparian forest ecosystems.

Objective – 2: Maintain and improve the watersheds of the Wildlife Sanctuary

Objective – 3: Conserve and maintain the endemic medicinal plants and germplasm of wild cultivars

Constraints	Strategies
<ul style="list-style-type: none"> Inadequate data base on Grizzled Giant Squirrel, Star tortoise and yellow throated bulbul, tufted grey langur 	<ul style="list-style-type: none"> Carry out intensive studies on Grizzled Giant Squirrel, Conduct population estimation of Grizzled Giant Squirrel biennially. Conduct bird census biennially to assess population changes including species composition during the plan period. Conduct studies on star tortoise and yellow throated bulbul, tufted grey langur
<ul style="list-style-type: none"> Breaks in canopy of riverine vegetation under 220 KV line & degradation of riverine vegetation 	<ul style="list-style-type: none"> Planting of these fragmented area with short trees like <i>Acacia planiferons</i>
<ul style="list-style-type: none"> Alteration of nature of forests by soil & moisture conservation activities 	<ul style="list-style-type: none"> Soil & moisture conservation works in pristine dry forests will be taken up based on scientific assessments Gravity water flow to be utilised for filling up of existing waterholes and dry streams and for providing water to settlements The existing water supply canal from Churulipetty to Chinnar and the water supply line from Thoovanam to Chambakkad to be maintained
<ul style="list-style-type: none"> Traffic along Marayoor-Chinnar road 	<ul style="list-style-type: none"> Traffic regulations along the road (restrict night traffic; speed regulations, putting signages, warnings on animal movement locations)
<ul style="list-style-type: none"> Widening of road, construction of retaining walls along the PWD road 	<ul style="list-style-type: none"> Implement Forest Conservation Act and orders in WP(C) 202/95
<ul style="list-style-type: none"> Human pressures on the habitats 	<ul style="list-style-type: none"> Conduct survey to demarcate tribal hamlets and settlement of rights under tribal Act. Explore possibility of relocation of settlements from inaccessible areas to more suitable areas Integrated land resource development focusing on food security through micro plan activities of EDCs
<ul style="list-style-type: none"> Vagueness in the boundary of the sanctuary at Ollavayal – Njavala area 	<ul style="list-style-type: none"> Conduct survey to clearly demarcate Ollavayal – Njavala areas
<ul style="list-style-type: none"> Plantations of exotics 	<ul style="list-style-type: none"> Remove plantations of exotics by permitting the tribes to collect firewood from them.

<ul style="list-style-type: none"> • Weeds 	<ul style="list-style-type: none"> • Eradication of exotic weeds and monitoring of weed infestation
<ul style="list-style-type: none"> • Cattle grazing 	<ul style="list-style-type: none"> • Suitable measures to be undertaken to control the migration and grazing of feral cattle jointly with the authorities of Anamalai Tiger Reserve • Reduce the number of cattle in settlements within the sanctuary and at the periphery. • Study the problem of cattle grazing; incorporate suitable activities in micro plan of EDCs. • Stop cattle from outside • Periodic vaccination of livestock
<ul style="list-style-type: none"> • Sandal smuggling 	<ul style="list-style-type: none"> • Extraction of dead and wind fallen trees and stumps of sandals • Strengthen interstate co-ordination to curb Smugglers across interstate border • Permanent tribal watchers (move proposal – WLW to include in protection plan) • Enhance the number of protection watchers • Strengthen infrastructures- arms and ammunitions, communication facilities, camping equipments • Establish dog squads – collaborate with WWF/TRAFFIC • Strengthen eco development activities
<ul style="list-style-type: none"> • Pollution of the Pambar river 	<ul style="list-style-type: none"> • Discharge of waste materials to be regulated starting from the estates in the upper reaches, Marayoor settlements; interdepartmental dialogues with panchayat and other agencies required • Interstate co-ordination with Anamalai TR to regulate pilgrimage related activities of Kodanthur detrimental to the water quality of Chinnar
<ul style="list-style-type: none"> • Ganja cultivation 	<ul style="list-style-type: none"> • Awareness campaigns among tribes • Co-ordinate with adjacent forest divisions to control Ganja cultivation along borders. • Ensure frequent visit to potential areas through protection plan
<ul style="list-style-type: none"> • Climate change 	<ul style="list-style-type: none"> • Larger landscape level planning, implementation and monitoring to tackle issues related to global climate change • Composite measures for riparian forest protection
<ul style="list-style-type: none"> • Lack of nodal centre to collect and disseminate information on 	<ul style="list-style-type: none"> • build up comprehensive data base on the scientific data generated from the area

biodiversity	<ul style="list-style-type: none"> • With the help of experts in various fields, compile information available • Comprehensive long term research plan should be prepared for the sanctuary focusing on full cataloguing of biodiversity and for management of the area
<ul style="list-style-type: none"> • Lack of integrated management of forests of ENP and Marayoor in Kerala and Anamalai TR in TN 	<ul style="list-style-type: none"> • Periodic meetings with officials of adjoining forest divisions/PAs • The existing approved protocol for interstate meeting shall strictly be followed. • Streamlining procedures for co-ordination meetings at higher levels
<ul style="list-style-type: none"> • Lack of integration of sanctuary management objectives with the micro plan prescriptions of adjacent territorial divisions 	<ul style="list-style-type: none"> • Prescriptions of adjacent territorial divisions to be in tune with sanctuary management objectives (take up the matter with DFO, Marayoor)
<ul style="list-style-type: none"> • Overlapping zone of influences 	<ul style="list-style-type: none"> • Close monitoring and integration of zone of overlapping interests
<ul style="list-style-type: none"> • Lack of baseline data on endemic medicinal plants 	<ul style="list-style-type: none"> • Documentation of endemic medicinal plants • Species recovery research for RET species
<ul style="list-style-type: none"> • Excessive and destructive collection of NWFP and possibility of more extraction in the light of tribal right act 	<ul style="list-style-type: none"> • Regulation of NWFP collection through EDCs • Training in sustainable collection of NWFP • Training in value addition of products • Cultivation of medicinal plants in the tribal hamlets
<ul style="list-style-type: none"> • Inadequate data base of critical sectors of research 	<ul style="list-style-type: none"> • Identify critical sectors of research and commissioning studies
<ul style="list-style-type: none"> • Inadequate monitoring programmes 	<ul style="list-style-type: none"> • Integrated comprehensive habitat monitoring plan for the sanctuary
<ul style="list-style-type: none"> • Inadequacy of trained man power 	<ul style="list-style-type: none"> • Train the departmental staff and EDC members in carrying out data collection and monitoring
<ul style="list-style-type: none"> • Possibility of drying of perennial rivers 	<ul style="list-style-type: none"> • No activity should be permitted which would disrupt the perennial of the rivers
<ul style="list-style-type: none"> • Fire 	<ul style="list-style-type: none"> • Prepare and implement a fire protection plan • Effective fire protection has to be undertaken with the support of EDCs and fire incidence to be systematically recorded and its impact to be studied

Objective – 4: Protect the sites of archaeological and anthropological importances

<ul style="list-style-type: none"> • Inadequate information 	<ul style="list-style-type: none"> • Highlight the cultural significance of the sites and documentation of the sites
<ul style="list-style-type: none"> • Lack of awareness on the part of guides and tourists 	<ul style="list-style-type: none"> • Create awareness among guides and tourists
<ul style="list-style-type: none"> • Inadequate protection of the explicit sites 	<ul style="list-style-type: none"> • Create awareness among tribes regarding the value of the sites.

Objective – 5: Promote environmental conservation awareness

Objective – 6: Facilitate nature-based regulated tourism and visitor management

<ul style="list-style-type: none"> • Lack of visitor management plan 	<ul style="list-style-type: none"> • Prepare a comprehensive Visitor management plan and implement
<ul style="list-style-type: none"> • Increasing number of tourists 	<ul style="list-style-type: none"> • Fix carrying capacity
<ul style="list-style-type: none"> • Depositing solid waste along the road through the PA 	<ul style="list-style-type: none"> • Create awareness among visitors • Display sign boards with rules and regulations of PA • Install waste bins in appropriate locations • Carrying out regular cleaning programmes with the support of EDCs
<ul style="list-style-type: none"> • Inadequacy of trained staff 	<ul style="list-style-type: none"> • Training to staff and EDC members

Objective – 7: Strengthen People-PA interface

<ul style="list-style-type: none"> • Lemon grass cultivation and consequent fuel demand 	<ul style="list-style-type: none"> • Plantation of exotics can be used for meeting fuel wood requirement of local community • Providing fuel efficient distillation units to tribes for reducing consumption of fuel wood.
<ul style="list-style-type: none"> • PFM activities along the state border is not integrated between the two states 	<ul style="list-style-type: none"> • Joint discussions between the officials concerned and EDCs of two states
<ul style="list-style-type: none"> • 11 settlements within the PA have extremely degraded lands 	<ul style="list-style-type: none"> • Address through FDA to improve the productivity of the cultivated land
<ul style="list-style-type: none"> • Settling of Land and community rights not completed 	<ul style="list-style-type: none"> • Facilitate settlement of rights • Permanent demarcation of the settlements may be carried out by construction of cairns, kayyalas etc.

<ul style="list-style-type: none"> • Olikudy – translocation issue 	<ul style="list-style-type: none"> • Submit proposal for relocation to GoI (Warden to discuss with the stakeholders) <i>high priority</i>
<ul style="list-style-type: none"> • Eucalyptus in settlements 	<ul style="list-style-type: none"> • Cultivation of Eucalyptus inside the sanctuary shall be limited only for use of tribes and not for sale.
<ul style="list-style-type: none"> • Cattle grazing 	<ul style="list-style-type: none"> • Removal of cattle owned by outsiders • Address through FDA and line departments/ Panchayats • Reduce the number of cattle by replacing with high yielding variety • Conduct a carrying capacity study of cattle and fix number of cattle
<ul style="list-style-type: none"> • Cultivation of lemon grass and expansion of lemon grass cultivated areas 	<ul style="list-style-type: none"> • Developmental activities through EDCs on the basis of comprehensive eco development plan in which multi departmental co-ordination is ensured • Constitution of an eco development implementation committee for monitoring of interdepartmental developmental activities • Sale of lemon grass oil through eco shops of EDCs
<ul style="list-style-type: none"> • Firewood collection for oil extraction 	<ul style="list-style-type: none"> • Explore new technology for extraction (prepare and implement a plan)
<ul style="list-style-type: none"> • Ganja cultivation 	<ul style="list-style-type: none"> • Develop and implement a protection plan • Strengthen intelligence network and improve intelligence gathering • Enforce legal provisions • Create awareness among tribes
<ul style="list-style-type: none"> • Zone of influence not demarcated 	<ul style="list-style-type: none"> • Revisit of micro plan in the light of settlement of rights • Demarcate zone of influence
<ul style="list-style-type: none"> • Resource dependency to be quantified 	<ul style="list-style-type: none"> • Address while revisiting micro plans (also address the issue of lack of reciprocal commitments in some EDCs for sandal protection)
<ul style="list-style-type: none"> • Lack of staff exclusively for eco development activities 	<ul style="list-style-type: none"> • Propose for additional staff (address in protection plan, including restructuring of staff deployment)
<ul style="list-style-type: none"> • Lack of eco development micro planning implementation support team 	<ul style="list-style-type: none"> • Avail services of support team (MIST) from the division • Capacity building among the staff for taking up the new task of participatory management of forests
<ul style="list-style-type: none"> • Lack of drinking water facilities / water for irrigation 	<ul style="list-style-type: none"> • Address through FDA (explore for check dam, awareness for Panchayat / other line departments on FDA and related matters)

<ul style="list-style-type: none"> • Isolated settlements in Mangappara and Olikudy 	<ul style="list-style-type: none"> • Initiate dialogues with the communities for relocation
<ul style="list-style-type: none"> • Inaccessibility, poverty and backwardness of the tribal hamlets 	<ul style="list-style-type: none"> • Site specific comprehensive educational programme to be developed aiming at long term attitudinal shift • Initiate, guide and monitor the educational activities in collaboration with HRWEPA &WWF

THE STRATEGIES

STRATEGIES

BOUNDARIES, ZONATION, ZONE PLANS AND THEME PLANS

6.1. Boundaries

6.1.1. Legal Boundary

North: Starting from cairn No.1 at the trijunction of the boundaries of Coimbatore District, Marayoor Pakuthy and Kannan Devan Hills at the North West corner of the Reserve, the line goes in a nearly north easterly direction for about $56\frac{3}{4}$ chains along the Chinnar River to cairn No.2 at a State Boundary Survey Stone on the bank of the Chinnar River, thence more or less east- south east for about $21\frac{1}{4}$ chains along the above said river to cairn No.3 at the State Boundary Survey Stone on the bank of the river side of that Survey No. for about $11\frac{1}{4}$ chains to cairn No.4 at its south west corner. (This is also the Western most point of S.No.251/1/1). Thence nearly east along the south side of the S.No. 257/1/1 for about $33\frac{3}{4}$ chains passing cairns No. 5 to 15 to cairn No.16 at its south east corner. Thence nearly south for about $6\frac{3}{4}$ chains to cairn 17 thence nearly south for about $6\frac{3}{4}$ chains passing cairn No.18 and crossing the approach road to the P.W.D. camp shed to cairn No.19 at the right bank of the thodu flowing to Chinnar River – then nearly north along that thodu for about $10\frac{3}{4}$ chains to cairn No.20 at its junction with the Chinnar River (from cairn numbers 16 to 20 the boundary follows the Western, Southern and Eastern Boundaries of the area allowed for the P.W.D. excluding the same from the reserve.) thence nearly east along the Chinnar River for about $7\frac{1}{2}$ chains to cairn No.21, on its bank; thence nearly south east for about $4\frac{3}{4}$ chains passing cairn number No.22, 23 to cairn No.24 on the West side of the approach road to the P.W.D. camp shed; thence east by slightly south for about $3\frac{3}{4}$ chains crossing the above road to cairn No.24A; thence nearly east- south east for 1 chain to cairn No.24B; thence nearly north-north east for $3\frac{1}{2}$ chains to cairn No.24C, thence east for $3\frac{3}{4}$ chains to cairn No.24D, thence north for $11\frac{1}{2}$ chains to cairn No.24E, thence west for $3\frac{3}{4}$ chains to cairn No.25; thence nearly north west for about $11\frac{1}{4}$ chains crossing the northern outlet road to cairn No.26 on the right bank of

the Chinnar river situated 81 links north west of the State Boundary Survey Stone between distance 438 and 500, (from cairn 21 to 26 the boundary follows the Western, Southern and Eastern boundaries of the area allowed for the Excise Office Cart Stand and tollgate excluding the same from the reserve); thence nearly east along the same river for about 11 chains to cairn No.27 at the Revenue Stone at the North West Corner of Survey 261/1; thence nearly South West along its West side for about 11/4 chains to cairn No.28 at its South West Corner, thence along the West, South and East sides of Survey No. 259/1 for about 63/4 chains passing cairn Nos. 29 to 31 to cairn No.32 at its North East corner; thence nearly East along the Chinnar River for about 721/2 chains to cairn No.34; it is junction of Pambar River with Chinnar River.

East: Thence nearly South- South West along the left bank of the Pambar River for about 43/4 chains to cairn No. 36 situated on the left bank of Athioda stream at its confluence with the Pambar thence nearly South South-East along the Athioda Stream (the boundary between Travancore and Coimbatore District) for about 4511/4 chains to cairn 37 where Athiodai cross the State Boundary for about 1263/4 chains to cairn No.38 at the top of Jambu malai peak at the trijunction of Coimbatore and Madurai Districts and Travancore State (This peak is locally known as 'Chinna Chambu Malai').

South and West: Thence nearly south west along the state boundary for about 38 chains to cairn No. 39 at the boundary stone at the north-east corner of survey No. 72/1 of Kothukombu Pakuthy at the trijunction of Keelanthur and Kottakombu Pakuthies of Devikulam Taluk and Palani Taluk of Madurai District (This place is locally known as Vellimalai); thence in the same direction for about 631/2 chains along the boundary between Keelanthur and Kottakombu Pakuthies to cairn No. 40 at "Chenkannimala" thence nearly West South-West along the above Pakuthy boundary for about 531/4 chains passing Velliyangiri hills to cairn No. 41 at the Village Boundary Stone at the trijunction of Kilanthur, Kootakombu and Kanthaloora Pakuthies (this place is also known as Vattachola lower); thence nearly North West for about 231/2 chains to cairn No. 42 at a Village Boundary Stone between Kanthaloora and Kilanthur Pakuthies, (this place is also known as Vattachola Upper) thence in same direction but more to the West for 30 chains to cairn No. 43 on the right bank of the Vannanthorai Stream ; thence nearly West North

West along the right bank of the above stream for about $109\frac{1}{2}$ chains to cairn No. 44 (here the stream leaves the boundary)) thence nearly North for about $21\frac{1}{2}$ chains to cairn No. 45 it has theodolite stone at the South East Corner of Survey No. 300/1 of Kilanthur Pakuthies thence along the East side of the above survey Number for about 9 chains passing cairn No.s 46 and 47 to cairn No. 85 of Vannanthorai Sandal Wood Reserve Block No. 11 at the theodolite stone at the North East Corner of Survey No. 300/1 thence along the Eastern, Northern and Western Boundaries of that reserve to its South West Corner at cairn No. 104 at a theodolite station on the right bank of the Kalikilavan Odai, thence nearly South West along the same bank of the said Oda for about 8 chains to its junction with the Vannanthorai River, thence along the right bank of the Vannanthorai River first nearly West North – West and then North-North West for about $140\frac{1}{2}$ chains to cairn No. 48 at its junction with the Pambar River thence nearly North along the right bank of Pambar River for about $107\frac{1}{2}$ chains to cairn No. 49 thence nearly North West for $21\frac{1}{2}$ chains crossing the Pambar River to cairn No. 50 on the left bank of Natchimuthu Odai at its confluence with the Pambar River: thence nearly South West along the left bank of the Natchimuthu Odai for about $83\frac{1}{4}$ chains to cairn No. 51 about $\frac{3}{4}$ chains South of the theodolite stone at the South East Corner of Survey No. 256/1; thence nearly North West along the East side of the above Survey Number for 3 chains to cairn No. 52 at theodolite stone at its North East Corner; thence more or less West for its Eastern edge; thence more or less West for about 7 chains to cairn No. 53 at the first quarter of the 29th mile of the near road on its Eastern edge; thence crossing the road for 1 chain to cairn No. 54 on its Western edge; thence along the same edge of the road first nearly West South West and then nearly North West for about 392 chains to cairn No. 65 where the Natchimuthu Odai crosses the above road; thence along the left bank of the same Odai for about $61\frac{1}{2}$ chains to cairn No. 56 on the Southern side of Survey No. 227/2; thence along and Southern side of Survey No. 227/2 and Southern, Eastern and Northern sides of Survey No. 227/1 for about $181\frac{1}{4}$ chains passing cairn No. 57 to 64 to cairn No. 65 at the North West Corner of Survey No. 227/1 on the left bank of the Natchimuthu Odai for about $48\frac{3}{4}$ chains to cairn No. 66 at the theodolite stone at the South West Corner of Survey No. 2881/2; thence skirting the Southern Eastern and Northern sides of the above Survey No. for about $261\frac{1}{4}$ chains passing cairn No. 67 to 75 to

cairn No. 76 at the theodolite stone at the North West Corner of the Survey Number on the left bank of the Natchimuthu Odai; thence first nearly North West and then West North -West along the same bank of the above Odai for about 156 chains to cairn No. 77 on the same bank Nandulamalai thence nearly South West for about 160 chains through Sy. No. 286/1/1 of Marayur Pakuthy passing cairn Nos. 78 to 80 to cairn No. 81 at a boundary stone on the boundary between the Kannan Devan Hills and Marayoor Pakuthies to the North of Kumarikal malai and to the East of Poovar thadam thence nearly North West along the above boundary for about 146 chains passing cairns 82 to 91 (this line crosses the Poovar between cairn Nos. 85 and 86) to cairn No. 1 at the starting point on the Northern Boundary.

Remarks: The boundaries of the sanctuary are well demarcated by constructing cairns along the boundaries. The boundary at Njvala Ollavayal area is vague. Steps shall be taken to identify the exact boundary at this location and cairns shall be re constructed at this location. Private and Public Rights existed as per the 1942 reserve notification. Of these the enclosure at Churulipetty (Marayoor Village) has been acquired. The enclosure at Ollavayal exists as per the notification, but the field condition needs to be verified and boundaries fixed. Similarly rights to PWD exist for road, and also for some land at Chinnar. Presently the excise and sales tax check post exist in Chinnar. As the boundary follows a series of cairns the cairns shall be maintained in proper condition.

6.1.2. Ecological Boundaries

On the North and East, it shares a 30 km common boundary with the Anamalai Tiger Reserve of Tamil Nadu. On the West, it is bordered by the Eravikulam National Park. But on the southern side, it is bordered by the Reserve Forests of Marayoor Sandal Division, part of Kurinjimala Sanctuary, and also by Revenue Lands. The Park provides ecological connectivity between the Anamalai Tiger Reserve and Eravikulam National Park.

6.1.3 Internal Boundaries

The entire sanctuary area was divided into two sections Chinnar and Karimutty, as per the previous management plan. But station system was introduced in August 2005 and since then the entire area of Chinnar WLS has been brought under the Karimutty Forest Station.

Considering the magnitude of issues, the area will be divided into two forest stations including the existing forest station. Hence there will be two forest stations as following:

- (i) Karimutty (existing)
- (ii) Ollavayal (proposed)

The proposed station shall have staff strength of One Deputy Ranger, 4 Foresters and 16 Forest Guards. The boundary of the forest stations will be the Pambar River. The eastern part of the river will be the proposed Ollavayal Forest Station and the western part will be under the existing Karimutty Forest Station. The Wildlife Warden will initiate necessary steps to notify the Forest Stations.

6.2. Zonation

The zonation has been done to achieve the following:

- Provide a geographical framework in which to manage the Sanctuary
- Indicate which management directions have priority in different parts of the Sanctuary
- Indicate the types and levels of use appropriate throughout the Sanctuary
- Assist in minimizing existing and potential conflicts between uses and activities, or between these and the protection of values
- Provide a basis for assessing the suitability of future activities and development proposals

In order to achieve the objective, the Wildlife Sanctuary and its adjoining areas are proposed to be managed as the following zones:

1. Within Wildlife Sanctuary

- Core zone
- Buffer zone
 - Tourism zone
 - Eco development zone

2. Outside Wildlife Sanctuary

- Eco-sensitive zone

The Tourism and Eco development zones are overlapping with the buffer zone.

6.3. Zone Plans

6.3.1. Plan for Core zone

As per the previous management plan the core zone of the Sanctuary is located in two parts that are relatively undisturbed and having good patch of grasslands and shola vegetation. One part lies on the western part of the Sanctuary at the boundary near Eravikulam National Park and the second part on the south-eastern side of the Sanctuary between Chungum area and Mangappara Settlement.

Western part of core: The core zone at the western part of the sanctuary lies to the western side of Anjunattumpara – Olikkudy trek path and extends to sanctuary boundary in the western, southern and northern directions. In the southern side, the core zone boundary is taken at distance of 200 meters from Olikkudy settlement boundary. The total extent of the western part of the core zone is 9.3 Sq.Km.

South-eastern part of core: This part has western boundary as the ridges of Thengamala and Velligiri malai and extends to sanctuary boundary in the southern side. The northern boundary is stream originating from northern end of Thengamala (Kadamankutti odai) and the southern boundary is again the boundary of the PA. The total extent of this part is 15.15 Sq.Km. Thus the

total extent of the core zone (Fig. 10) in the Wildlife Sanctuary is 24.45 Sq.Km. In the core zone, the following activities will be carried out during the plan period:

- Protection from illegal activities, which are detailed in the Theme Plan for 'Protection' in section 6.4.1.
- Fire protection activities including controlled burning and participatory fire management as given in theme plan for 'Fire Protection' under section 6.4.2.
- Water shed management activities as detailed in the Theme Plan for 'Water shed and Habitat Management' under section 6.4.3.1.
- Research studies to facilitate improved protection and management of core zone (Chapter 9).
- The probability of the extension of core zone shall be investigated during the plan period by resettling the tribal settlements situated at Olikkudi and Mangappara which are presently lying close to the core zone. Steps shall be taken to declare these areas as Critical Wildlife Areas.

6.3.2. Plan for Buffer zone

The buffer zone of the Wildlife Sanctuary includes all areas other than core zone. However, the buffer zone contain areas of overlapping zones such as tourism and eco development zones which are detailed in sections 6.3.2.1 and 6.3.2.2 respectively. The total extent of the buffer zone excluding the tourism zone and eco development zone is 33.42 Sq.Km. (Fig. 10)

All the activities undertaken in the buffer zone will be aimed at ensuring sustainable livelihood for the tribal people without hampering the management objectives. Though grazing and collection of natural resources for commercial purposes are prohibited in the Wildlife Sanctuary, the Tribal Rights Act permits traditional rights of local tribal communities. In the buffer zone, in addition to protection, fire management, watershed management and research activities as proposed in the core zone, the following activities will be carried out:

- Habitat management activities as detailed in the Theme Plan for 'Watershed and Habitat Management' under section 6.4.3.2.
- Activities related to sustainable livelihood of the local tribal communities as described in Chapter 8 will be implemented in the buffer zone during the plan period.

6.3.2.1. Tourism zone

As per the existing management plan the Tourism zone lies on either sides of the PWD road between Marayur and Udumalpet passing through the sanctuary. But some of the tourism programmes offered to the visitors extend marginally into the buffer zone as these programmes are aimed at providing alternate livelihood to the local tribal community that in turn ensure protection of the PA.

The boundaries of the tourism zone are as follows:

In the North the zone boundary is from Churulipetty to Koottar. From Koottar the boundary is along the river Pambar upto the point where the PWD road enters the sanctuary. Then the boundary follows upper side of PWD road to a distance of 200 meters from the road till it reaches Mukkuvarai ridge. From there the boundary follows the ridge upto the stream originating and flowing to churulipetty (Kuthukattu odai). Thus the total extent of the tourism zone is 12.73 Sq.Km. (Fig. 10)

The tourism zone will be managed with focus on visitor management; nature-based regulated ecotourism programmes and promote environmental conservation awareness. The sites of the archeological and anthropological importances located within this zone will also be protected and managed with the active support of the EDCs. All the activities in this zone will strictly be implemented as described in Chapter 7 - 'Tourism, Interpretation and Conservation Education'.

6.3.2.2. Eco development zone

The Eco development zone consists of areas of all the eleven tribal settlements and the impact area (200 m from the periphery around the settlements). The total extent of this zone is 19.49

Sq.Km. which includes 10.0 Sq.Km of the tribal settlements (Fig. 7) as detailed in Table 16 under section 4.1 in Part I.

The eco development zone will be intensively managed with the activities proposed in Chapter 8 for ensuring sustainable livelihood of the local tribal communities without hampering the ecosystem and management objectives.

6.3.3. Eco sensitive Zone

Protected areas cannot be managed as islands of biodiversity, but only as a vital component of a wider landscape consisting of Reserved Forest, plantations, human habitations, tribal hamlets, small towns etc. with varied types of land use. Hence it is necessary that site specific Eco-sensitive zones are delineated within these areas so as to bring these areas within a regulatory framework of development that is in tune with the management of the PA. The cluster of PAs extending from Chinnar WLS, Eravikulam NP to Mathikettan Shola NP are surrounded by biodiversity rich areas that are under the control of various other agencies and currently managed without any concern for conservation. The major threats to the areas between Chinnar WLS and Kurinjimala WLS are blocking of corridors for larger mammals like elephants, habitat destruction, unsustainable resource harvest, unscientific construction and road laying, destruction of cultural sites, etc. Considering the impacts of the surrounding villages on the forests, the above mentioned areas are to be notified as eco sensitive areas to Chinnar Wildlife Sanctuary. Hence, the eco sensitive zone will be decided by the committee constituted by the Principal Chief Conservator of Forests and Chief Wildlife Warden as declared by the Government of Kerala in GO(MS) No. 25/2011/F&WLD dated: 29th June 2011

6.4. Theme Plans

The Chinnar Wildlife Sanctuary shall be managed under the following three specific theme plans;

1. Protection
2. Fire Protection
3. Watershed and habitat management

6.4.1. Theme Plan for Protection

The Chinnar Wildlife Sanctuary is having total extent of 90.44 km². The major threats like illicit felling of Sandal tree, cultivation of ganja, poaching, forest fire etc still exist. The sanctuary is also having pressures on natural resources like grazing, firewood collection, NWFP collection etc. In order to protect the natural resources of the PA the following strategies and activities are proposed in this protection plan.

The Wildlife Warden will be responsible for overall control of the PA. Chief Conservator of Forests and Field Director, Project Tiger, Kottayam and Chief Wildlife Warden will be responsible to implement and review the protection plan. The Wildlife Warden is provided with office and residential buildings, electricity, telephone, wireless and water connections.

This protection plan is a guideline with effective patrolling strategies to mitigate spatial and temporal threats and the problems in achieving the objectives of management are stated in section 5.1. The nature and extent of threats are detailed in section 3.6.2 and 3.13. In order to tackle the threats and strengthen protection, strategies are identified and the protection plans are given below:

6.4.1.1. Consolidation and maintenance of boundary

The boundaries of the PA are entirely demarcated but in certain areas like Njavala-Ollavayal, the status of the boundary is vague and is not corresponding to the notification and the situation in the field. Hence the PA boundary in Njavala-Ollavayal region will be surveyed and demarcated using cairns. The existing cairns shall be maintained in proper condition.

6.4.1.2. Reorganization of administrative units

The entire sanctuary area was previously managed under two sections viz., Chinnar and Karimutty. However, after the notification of Karimutty Forest Station, there is no section system and the entire area of the PA is managed under a single Forest Station. This system of managing the entire PA under a single Forest Station poses serious problem in protection activities especially in the light of sandal smuggling issue. Considering the magnitude of these

issues, the area of the PA is proposed to be divided into two forest stations including the existing forest station. Hence there will be two forest stations as following:

(iii) Karimutty (existing)

(iv) Ollavayal (proposed)

The proposed station shall have staff strength of One Deputy Ranger, 4 Foresters and 16 Forest Guards. The boundary of the forest stations will be the Pambar River. The eastern part of the river will be the proposed Ollavayal Forest Station and the western part will be under the existing Karimutty Forest Station. The Wildlife Warden will initiate necessary steps to notify the Forest Stations.

6.4.1.3. Protection Camps

6.4.1.3.1. Existing anti-poaching camps

There are six protection camps; viz; Alampetty, Vazhathura, Vannanthura, Palapetty, Churulipetty, Chungum which are manned permanently throughout. Of which the first four are located in the sandal bearing areas and remaining are along the interstate boundary. These six camps shall be continued to be manned throughout so as to check the illegal activities.

In addition, anti-poaching camps existing in Karimala, Thengamala, Kannimar, Kovilpara and Aralipara are used for camping for staff and watcher during their perambulation in the neighboring region.

6.4.1.3.2. Proposed anti-poaching camps

In addition to the above camps, one anti-poaching camp is proposed to be constructed at Njandalamala region which is highly prone to ganja cultivation. Since the area is highly remote, a pre-fabricated steel structure is proposed. Other basic amenities for the stay are also proposed to be developed during the 2nd year of the plan period.

6.4.1.3.3. Official and residential buildings

The existing official and residential buildings as given in Table 12 will be maintained as and when required. The basic amenities such as lighting, drinking water, etc will be improved in these buildings. A library in each station/section headquarters will also be developed.

At present the Office of the Asst. Wildlife Warden is functioning on a duplex Quarters at Marayoor. It is proposed to construct a new office and quarters for the Asst. Wildlife Warden at Marayoor. A duplex quarter for Forest Guards shall be constructed at Karimutty. The buildings at Chinnar shall be maintained and put to use. The old range office at Chinnar shall be turned to an office for the EDC's functioning in the Sanctuary.

6.4.1.4. Patrolling schedule

The Assistant Wildlife Warden will divide areas other than sandal bearing areas into patrolling units and communicate the perambulation schedule to the staff on monthly basis for implementation. Anti poaching mazdoors on daily waged basis shall be engaged to assist the staff in perambulation. The Assistant Wildlife Warden and Wildlife Warden will also join for patrolling and make frequent surprise checks.

Frequent special ganja raids may also be arranged by the Wildlife Warden / Asst. Wildlife Warden.

The staff will maintain the movement register and wildlife monitoring register which will be subject to frequent inspection by Assistant Wildlife Warden and Wildlife Warden.

6.4.1.5. Interstate coordination

The PA shares a total length of 30 kms of interstate boundary with Tamilnadu. In addition to perambulation and monitoring of the region, frequent sharing of information between the officials of neighboring forest divisions within and outside the State are necessary. It is proposed to conduct meeting at the Range Officers level once a month. The Range Officers of Marayur Sandal Division will also be made part of the meeting.

There already existing an approved protocol for interstate meeting which will be strictly followed.

6.4.1.6. Strategies for Specific Issues

6.4.1.6.1. Sandal protection

The existing situations of sandal protection including sandal regeneration survey and the blocks of sandal are given in detail in Part I (section 3.6.2.4). The protection camps will be conducted

regularly in all the sandal regeneration blocks as given in the following schedule. In addition protection camps will also be conducted at the interstate boundary area such as Chungam and Churulipetty.

Table 20 : Details of Protection camp

Sl. No	Name of camp	Area covered	Sandal Block	No. of staff and watchers
1.	Vannamthura	Vannamthura Puthuvettu kalkinar	Palapetty - Vannamthura	Forester- 1 Forest Guard – 2 Watchers- 10
2.	Palapetty	Palapetty Indankadu Pullukadu Anakkunnu	Palapetty - Vannamthura	Forest Guard – 2 Watchers- 12
3.	Alampetty	Alampetty Jallimala Karimutty	Karimutty- I&II	Forester- 1 Forest Guard – 3 Watchers- 14
4.	Vazhathura	Alampetty Jallimala Karimutty	Alampetty-I&II	Forester- 1 Forest Guard – 3 Watchers- 16
5.	Churulipetty /Chinnar	Churulipetty Karimala	Interstate	Forester- 1 Forest Guard – 3 Watchers- 6
6.	Chungam	Chungam Thenakkadu	Interstate	Watcher- 2

Patrolling during day and night hours will be conducted regularly in the above said areas. Apart from regular field perambulation, road patrolling will also be conducted round the clock. The border check post functioning at Chinnar will be vigilant throughout and check all vehicles passing through. An existing checking station located at Karimutty will be functioning between 6 pm to 6 am.

The sandal bearing areas shall have separate perambulation procedure as there is intense smuggling pressure. The sandal bearing areas shall be divided into blocks. The blocks shall be put under the charge of foresters and guards. Each sandal block shall be divided into protection units and shall be perambulated during day and night by using daily waged watchers. The Deputy Range Officer and Asst. Wildlife Warden shall ensure that the

perambulation procedure is followed strictly. Adequate number of daily wage watchers shall be engaged for this purpose. Temporary sheds if necessary shall be erected for the use of watchers and staff. The staff and watchers shall be stationed at the Out posts as well as camp sheds constructed at the interstate boundaries.

The trees located in each block will be periodically enumerated and the sandal enumeration register will be maintained properly. All changes caused due to offences will be meticulously incorporated in the register maintained for the purpose.

The presence of large number of dead and wind fallen sandal trees pose serious threat to protection. In the same manner the stumps of sandal stumps involved in offences are also present within the PA. The extraction of dead and wind fallen sandal trees and stumps of sandal trees involved in offences shall be taken up during the pain period.

Tribal people engaged on daily waged basis form the major component of Sandal protection activities. Proposal shall be moved during the plan period to appoint permanent tribal watchers from among the dependent communities of the PA.

6.4.1.6.2. Ganja cultivation

There have been instances of ganja cultivation in remote areas that calls for constant vigil on the part of Park management. The areas susceptible to ganja cultivation are Pothadi, Olikkudy, Puthukkudi, Eruttalakudy, Mangappara, Koymanchola, Kariveppinchola etc. These areas will be continuously monitored to prevent instances of ganja cultivation. Frequent special ganja raids based on the information gathered through intelligence network will be arranged by the Wildlife Warden / Asst. Wildlife Warden.

6.4.1.6.3. Cattle grazing

Livestock grazing is a major problem in the PA. The number of cattle is ever increasing and grazes in the PA. The problems associated with the livestock grazing is detailed in para 3.7.3.8. The following is the summary of cattle in various settlements.

Table 21: Details of Livestock in Tribal Settlements within PA

Name of Settlement	No. of Cattle	No. of Goat
Chambakkad	143	99
Alampetty	4	38
Eachampetty	5	92
Palampetty	149	132
Thayannamkudy	72	107
Puthukkudy	16	62
Vellakkalkudy	18	87
Olikkudy	5	30
Eruttalakudy	48	33
Ollavayalkudy	0	12
Mangapparakudy	4	14
Total	464	706

In order to curb the effect of cattle grazing on the PA, the following strategies are proposed:

- Conduct a study to study the problems associated with cattle grazing and to evolve strategies to reduce the numbers and fix a limit
- Reduce the number of cattle to a minimum in the settlements located within the sanctuary and on the periphery exploring by translocation / buying out.
- Suitable measures to be undertaken to control the migration and grazing of feral cattle jointly with the authorities of Anamalai Tiger Reserve
- Explore possibility of user-group EDCs and manage the issue through incorporating suitable activities in micro plan.
- Strictly prevent cattle from outside grazing in the PA.
- Encourage to reduce the number of cattle by promoting high yielding varieties
- Promote stall feeding
- Ensure timely vaccination and de worming
- Collaborate with Panchayat, Animal Husbandry Department, Tribal Welfare and other line departments that supplies cattle to these settlements to reduce such activities.

- Address the livelihood of local tribal community especially who depend on cattle for their livelihood through alternate income generating activities.
- Construct a cattle pound to implement the provisions of the cattle trespass act, if necessary

6.4.1.6.4. Pollution of Pambar river

The pollution of river Pambar by waste materials from the estates in the upper reaches and Marayur settlements will be controlled/curbed through following strategies;

- Explore possibilities of control or regulate discharge of pollution to the river through interdepartmental dialogues with panchayat and other agencies
- Interstate co-ordination with Anamalai TR to regulate pilgrimage related activities at Kodanthur that is detrimental to the water quality of Chinnar

6.4.1.6.5. Widening of roads

The developmental impacts are mainly due to widening of PWD road passing through the PA resulting in restriction to animal movement across the road. In order to curb such development, Forest Conservation Act and orders in WP(C) 202/95 will strictly be implemented.

6.4.1.6.6. Heavy vehicular traffic

A heavy vehicular traffic is being experienced along Marayoor-Chinnar road that many times hamper the free movement of animals even during night hours. Moreover, road hits due to speedy vehicles are also found along this road. To control such heavy traffic and associated problems following strategies will be implemented:

- Impose traffic regulations along the road and explore possibilities of restricting night traffic especially for two wheelers. Ban movement of two wheelers during night hours.
- Explore possibility of imposing periodic break on night traffic.
- Impose speed regulations
- Speed breakers in crucial points.
- Signages with rules and regulations of the PA

- Warnings at animal movement locations
- Impose fine to speedy vehicles
- Carry out a carrying capacity study for the road traffic and implement the strategies evolved through the studies
- Make escape ramps for animals to cross over the high way.
- Conduct night patrol along the road.

6.4.1.6.7. Protection of sites of archeological and anthropological importance

Inadequate protection of the explicit archeological and anthropological important sites and inadequate information about such sites along with lack of awareness on the part of guides, local tribes and tourists are highlighted to a problems associated with this issue, hence the following strategies are proposed:

- Highlight the cultural significance of the sites and documentation of the sites
- Create awareness among guides and tourists
- Create awareness among tribes regarding the value of the sites.

6.4.1.6.8. Plantations of exotics

This problem is dealt separately under habitat management.

6.4.1.6.9. Over exploitation of NWFP and collection of firewood

NWFP is collected mainly by the Tribes settled within the Sanctuary. The main products include fire wood, honey, gooseberry etc. Collection of NWFP by persons other than tribes of the sanctuary will not be entertained. The quantity of materials collected by the tribes will be studied. However, this issue is dealt separately under eco development chapter.

6.4.1.6.10. Fire

This issue is also dealt separately under theme plan for 'Fire Protection'.

6.4.1.7. Infrastructure Development

6.4.1.7.1. Improvement of facilities in existing camping stations

The existing camping stations and anti-poaching camp sheds will be improved with atleast the basic amenities such as solar power lantern, field cots, drinking water, etc in order to provide the basic amenities to the field staff.

6.4.1.7.2. Buildings and Anti-poaching camps

All the buildings of various offices, staff quarters, residential buildings and anti-poaching camps along with watch towers are given in Table 12. It is proposed that all these infrastructures and the newly proposed infrastructures will be maintained as and when required during the plan period in order to facilitate the perambulation and protection activities.

6.4.1.7.3 Check posts

Presently an interstate check post is functioning at Chinnar. One forester and three forest guards are posted at Chinnar check post. Four daily wage watchers including two lady watchers are posted to assist the staff. The same will be continued during the plan period. A checking station is functioning at Karimutty from 6pm to 6 am to support sandal protection activities. This checking station will also be continued to operate. The maintenance of check post including buildings and other infrastructures will be carried out as and when required during the plan period.

6.4.1.7.3. Roads

The following fair-weather roads are passing through the Sanctuary. These roads are used to travel to tribal settlement and for protection purposes.

- | | |
|------------------------------|--------|
| (i) Chinnar - Thayannankudy | - 6 km |
| (ii) To Alampetty Settlement | - 1 km |
| (iii) Chinnar to Koottar | - 4 km |

The existing roads will be maintained as and when required during the plan period. No new road is proposed during the plan period.

6.4.1.7.4. Trek paths

A total length of 74 km of trek paths as given in the following table exists in the PA.

Table 22: List of Trek paths

List of Trek paths	
Name	Length (Km)
Champakkadu to Thoovanam	10.00
Palapetty to Mangappara	8.00
Anjunattumpara to Olikkudy	5.00
Karimutty to vazhathura	8.00
Pazhayakudithara to Anakatti	10.80
Chungum to Mangappara	7.40
Vellakkal to Pothumala	9.00
Karimutty to Thoovanam	2.80
Njandalamala to Koymanchola	3.00
Koottar to Churulipetty	7.00
Alampetty to Thoovanam	3.00

These trek paths were constructed for perambulation purposes and the same will be annually maintained to facilitate protection. It is proposed to create new trek paths within the sandal protection blocks to facilitate perambulation of the area. New trek paths as demanded by the protection may be taken up with .

6.4.1.7.5. Communication facilities

At present there are four main wireless stations and hence almost all area is brought under wireless communication network. At present there are twenty number of walkie talkies. The sandal protection blocks at Vannanthura and Palapetty are not provided with Walkie Talkies. 30 more walkie talkies will be procured so as to provide enough number of wireless sets

to protection units. Also steps will be taken to provide solar based wireless charging systems to out posts. Possibility of providing WLL phones to Alampetty, Vazhathura, Vannanthura and Palapetty shall be explored and implemented if feasible.

Present day technology provides for advanced methods of surveillance and monitoring. These are expected to become universal and cost effective. These include mobile phones for communication, remote cameras, installation of Radio Frequency Identification (RFID) and monitoring through wireless or satellites. These techniques shall be explored and adopted for enhancing protection.

6.4.1.7.6. Vehicle

The 3 Jeeps and 2 Motor bikes in Chinnar Wildlife Sanctuary used for protection will be maintained as and when required. Timely replacement of old vehicles shall be ensured to maintain the protection related infrastructures.

6.4.1.7.7. Arms and ammunition

At present the Asst. Wildlife warden is having a revolver and the staffs are having 3 Rifles (0.315). It is proposed to provide pistols to the Asst. Wildlife Warden and Deputy Ranger. It is also proposed to provide 3 rifles and adequate ammunition based on the requirement during the plan period.

6.4.1.7.8. Deployment of staff

All vacant positions should be filled up regularly. For effective protection of the Reserve, additional staff is proposed as part of proposed Forest Station in section 6.4.1.2.

6.4.1.7.9. Capacity Building

Training will be given to patrolling staff in unarmed combat, survival skills, usage of fire arms, first aid, swimming, driving etc. with the assistance of Police. Training will also be given in the preparation of offence reports. Selected staff will be trained as 'handlers' as part of

intelligence gathering. Police should be approached for giving short term trainings on intelligence gathering at regular intervals. Exposure training to staff in identification of plants and animals will be periodically provided to staff working in the PA as part of building their capacity.

In addition to the above, local persons from the tribal communities with aptitude will be identified and trained in basics of wildlife crime detection. Detailed training requirements are provided in Chapter 9.

6.4.1.7.10. Intelligence Gathering and Coordination

The Wildlife Warden, Assistant Wildlife warden and staff will develop liaison with NGOs, peoples' representatives, EDC members Tribal Heads, interstate officers, Crime Control bureau officials, in sharing information. The informants may be paid suitably. The Wildlife Warden may move proposal for fixing the rewards to the informants depending on the type of crime and information. Legal support will be made available as required. The wildlife Warden will review and monitor the implementation of the protection plan.

The Assistant Wildlife Warden will also collect credible information through confidential channels employing agents or sources. Confidential sources and agents will be identified, trained and placed in position to get confidential information.

6.4.1.7.11. Joint Patrolling and Meetings

Joint patrolling and meetings of various levels of officials will be held with the adjoining forest divisions within Kerala and Tamil Nadu side. This will be ensured by the Wildlife Warden and Assistant Wildlife Warden.

6.4.1.7.12. Exchange of Crime Dossiers

The Wildlife Warden /DFOs will exchange the crime dossiers with police to update and review with District Superintendent of Police at least once in six months. The information will also be shared with adjacent forest divisions in Tamil Nadu to ensure effective protection.

6.4.1.7.13. Review of protection issues

Based on the threats and protection issues, threat perception and vulnerability of various regions in the PA will be developed.

6.4.1.7.14. Maintenance of Records

Following records will be maintained by Wildlife Warden, Assistant Wildlife Warden and Section staff.

- Records of vehicles passing through check posts.
- Offence Registers at Division/Range/Station.
- Arms and ammunition Register (Range/Station)
- Records of dossiers of habitual/ incorrigible offenders in the Range.
- Regular supervision schedule for ROs.
- Records of surprise visit by Senior Officers (Field Director, Project Tiger and Wildlife Warden).
- Staff in each Section will maintain
 - Movement Register
 - Wildlife sighting/daily monitoring/observation Register (Wildlife Journal)

6.4.1.7.15. Equipment / Field Gears

It is proposed to procure field equipment such as Tents, Compass, GPS, Binoculars, Range finder, Digital camera, Rain Gauge, Thermometer, Hygrometer, Camera trap, field kits, etc. will be provided to all camping stations manned. In addition the watchers will be provided with field uniform once a year during the plan period.

6.4.1.7.16. Staff welfare activities

The Wildlife Warden will have meetings with the staff and include the staff amenities items in the APO funded by Government of India. At present the Govt. of India is providing staff welfare inputs like residential accommodation for the children of frontline staff in nearby

town/villages, supply of kerosene, medicine, field kit, mosquito net, torch, etc. Camp food shall be provided to staff and watchers stationed at interior camps.

6.4.2. Theme Plan for Fire Protection

Forest fire is the basic threat to the forest, which cause considerable damage to the flora and fauna in the area. A fire management plan shall be prepared each year in advance before the onset of fire season. The existing road, trek paths, rivers, etc. may be considered while preparing fire plan.

6.4.2.1 Fire Management Plan

Fire protection measures will be taken in accordance with approved fire management plans.

General Guidelines for Preparation and Implementation of Fire Management Plan

- Identify the cause and consequences of fire at PA level.
- Prioritize and map fire prone areas based on local knowledge.
- Prepare plans on annual basis.
- Provide adequate training to fire-fighting squad in fighting fires and self-defense.
- Develop infrastructure by procuring necessary equipments and materials required for fire protection based on annual assessment.
- Develop proper monitoring protocols.
- Ensure timely implementation of interventions.
- Maintain fire records at Range and Division level.
- Report incidences of fire to Wildlife Warden and Field Director for evaluation and further action.
- Document the results of fire protection measures taken annually.

6.4.2.2 Fire Management Strategies

Following measures are proposed to prevent extensive fires.

6.4.2.2.1 Fire lines

The Wildlife Warden will maintain the following existing fire lines in the fire prone areas.

Table 23: List of Fire lines

1	Jallimala - Thengamala	5.0 Km
2	Chamabakkadu - Churulipetty	4.0 Km
3	Around Alampetty settlement	4.0 Km
4	Alampetty - Mulangamutty	9.0 Km
5	Alampetty - Eachampetty	4.0 Km
6	Around Palapetty settlement	4.0 Km
7	Mathini - Palalpetty	2.5 Km
8	Thayannankudy - Olikudy	7.0 Km
9	Around Puthukudy settlement	4.0 Km
10	Around Karimutty Sandal Block-1	4.0 Km
11	Around Olikudy settlement	4.5 Km
12	Around Mangappara settlement	4.0 Km
13	Around Vellakkalkudy settlement	4.0 Km
14	Around Ollavayalkudy Settlement	5.0 Km
15	Chinnar to Karimutty (upper side of PWD road)	13.5 Km
16	Chinnar to Karimutty (lower side of PWD road)	13.5 Km
17	Around Alampetty Sandal Block I	1.3 Km
18	Around Alampetty Sandal Block II	6.0 Km
19	Mathini - Kumarankunnu	8.0 Km
20	Around Karimutty Sandal Block II	3.0 Km
21	Korakkadavu - Chottuthanni	5.0 Km
22	Around Eachampettykudy settlement	5.0 Km
23	Around Eruttalakudy settlement	5.0 Km
24	Vannamthura - Puthuvettu	3.5 Km
	Total	128.8 Km

New fire lines if required shall be created based on the analysis of the previous year's fire management plan and effectiveness of the fire protection.

6.4.2.2.2 Controlled pre-burning

Controlled burning is prescribed for the grasslands at Ollavayal, Mangapara and above Pudukkudy for providing fresh shoots for tahr and also to avoid late burns.

Guidelines for controlled pre-burning:

Controlled pre-burning is practiced to avoid accumulation of combustible materials and to enrich food availability to herbivores. Following guidelines are to be followed:

- Grasslands to be burnt in will be identified and divided into blocks using natural features such as streams, nullahs, roads, trek paths, etc.
- Controlled pre-burning will be practiced during December (just after the rains),
- On average, up to 0.25 km² (25 ha) blocks may be taken depending on the locality.
- Each block burnt will be surveyed and recorded using GPS.
- Blocks will be burnt on a three year rotation.
- Fire will be set only after taking fire lines around the prescribed burning regime set apart to prevent spreading of fire to surrounding forests.
- Grass cut while clearing lines is to be burnt within the block.
- Fire should not be set at night as this will attract nocturnal insects, birds and animals. Ideally burning is to be done during early morning or evening hours.
- Before burning, target area should be flushed to drive out animals and birds. Simultaneous setting of fires on all sides of the block should be avoided.
- Fire should be set opposite to the wind direction to control speed/ velocity and intensity.
- On hill slopes, fire is to be set from top down direction for better control.
- Controlled burning should be carried out only in the presence of staff.
- Necessary fire-fighting equipments should be procured in advance. Staff and labourers involved for burning should be trained in using fire-fighting instruments.

- Sufficient number of persons have to stand at equal intervals along a line with either petrol or kerosene to ignite from the base line simultaneously. Fire will be controlled and biomass will burn slowly giving space for the wildlife to move out. This traditional practice of tribal communities is also cost-effective.

6.4.2.2.3 Fire Watchers

The fire season in Chinnar differs from other parts of Kerala. In the dry forests the fire season extends from end of February to the month of August and hence fire gangs are to be engaged throughout this season for efficient fire protection activities. The presence of tribal settlements in almost all parts of the sanctuary is a feature of Chinnar Wildlife Sanctuary. Hence fire gangs are to be engaged from among the tribes and they should be stationed at all the tribal settlements.

6.4.2.2.4 Participatory Fire Management

Participatory fire management shall be based on the guidelines circulated by the Principal Chief Conservator of Forests in Circular No. E&TW1-2002/08 dated 14.11.2008.

Tribes from all the eleven settlements are engaged in fire prevention and protection activities. A micro plan for participatory fire management may be prepared annually for each EDC detailing the extent of area, people involved, benefit sharing, etc. The area for fire management will be identified and allotted to the EDC based on its geographic location. Funds for the prescribed operations will be placed in the EDC account on the basis of a MoU.

Participatory Fire Management Plan will include the causes/sources of fire, preventive measures and conditions specified in line with the circular given in Appendix 7.2. The plan will be signed by a member of the EDC subgroup, President and Ex-Officio Secretary/Staff in-charge of the Section. Plan will be approved by the Range Officer.

6.4.2.3 Awareness and Training

Awareness campaigns are essential for preventing fire especially in the surrounding areas of tribal settlements. These will be organized through notices and posters, stickers, boards, etc. EDC-based awareness campaigns highlighting fire preventive and containment measures among children and youth in the localities will be held during the fire season. Creative programmes in this regard will also be developed.

6.4.2.4 Training programmes

Training programmes for staff, watchers and other members of the community involved in fire protection will be organized.

6.4.2.5 Fire watchtowers and communication network

The present infrastructure and communication facilities will be made use of in fire protection to prevent the fire incidents and to mobilize additional forces in case of necessity.

6.4.2.6 Firefighting equipment

The equipment like gum boots, fire resistant suit, etc may be procured and made available to the fire camps.

6.4.2.7 Impact Monitoring

Incidents of fire will be documented and reported promptly to the Field Director and Chief Wildlife Warden. Controlled pre-burning areas will be monitored to assess their impact and streamline future activities.

The Wildlife Warden will review the fire plan every year after the fire season. The gap in fire protection will be identified and suitable proposals may be made in the ensuing year to make Chinnar Wildlife Sanctuary totally fire free.

6.4.3 Theme Plan for Watershed and Habitat Management

6.4.3.1 Watershed Management

There is large variation in the availability of water in different parts of the Sanctuary. Major parts of Sanctuary receive rainfall during North-East monsoon occurs during October-December. But the areas near to Eravikulam and Kambakkallu Valley receive rain during both North-East and South-West monsoons. The lower reaches of the sanctuary has 6 – 7 months of dry period on an average.

Most of the rivulets and streams inside the sanctuary come alive immediately after the North-East monsoon and dry up soon. A few streams originating from the upper reaches are perennial. Chinnar and Pambar are the major sources of water.

The utilization of habitat by the wild animals depends on the availability of water resources within their reach. The people within the settlements also depend on the water available in the Sanctuary for drinking and irrigation purposes. To provide judicious distribution of water sources for wildlife and to fulfill the water needs of the tribes, following strategies and activities are proposed.

- Mapping of water sources – water holes, check dams, streams and other natural sources with seasonality.
- Installation of automated weather stations at Karimutty and Chinnar for regular recording of weather data.
- The existing water holes and check dams shall be de-silted and maintained properly.
- Construction of new check dams or water holes shall be taken up based on requirements by field assessment.
- Soil and moisture conservation activities shall be limited to the upper reaches of the sanctuary where the probability of soil erosion is high.
- Assessment study and preparation of a status paper on water resources and seasonality with proposal for future development of water holes and

checkdams/anicuts will be carried out early during plan period and proposals implemented during the 1st year of the plan period.

6.4.3.1.1 Soil/moisture conservation works

Some of the areas of core as well as buffer zones are severely prone for soil erosion. Soil/moisture conservation works such as gully plugging will be carried out in identified areas so as to check the soil erosion. However in the drier zones such activity is found to be changing the vegetation types. Hence, soil and moisture conservation works in pristine dry forests will be taken up based on scientific assessments.

6.4.3.1.2 Maintenance of structures of water supply

The existing water supply canal from Churulipetty to Chinnar will be maintained. In addition, gravity water flow will be utilised for filling up of existing waterholes and dry streams and for providing water to settlements.

6.4.3.2 Habitat Management

6.4.3.2.1 Management of exotic plantations

Certain areas of the PA were planted up with exotics like wattle, eucalypts, etc in the past. It is prescribed to remove such plantations in such a manner that the fuel wood requirements of the local communities can be met while removing these species.

6.4.3.2.2 Management of exotic weeds

Weeds like lantana and Parthenium can be removed on an experimental basis by tackling a small area and monitoring the results systematically. About 100 ha of lantana thickets at Mangapara old settlement is prescribed to be taken up for weed eradication. Here selective removal is prescribed. The suppressed natural seedlings will be identified and lantana bushes around them will be removed by uprooting and burning when dry. Such small openings would lead to growth of tree species which in turn would suppress lantana naturally. Parthenium shall be removed by uprooting and burning before flowering.

6.4.3.2.3 Planting in fragmented canopy regions

Most of the studies carried out on GGS highlights the breaks in the canopy of riverine vegetation under the 220 KV line and its degradation in some areas as the primary threat. The fragmented areas will be focused and covered by short trees like *Acacia planifrons* because of the clearance regulations under 220 kv line. *Ficus* seedlings shall be planted in front of Chinnar check post to establish habitat continuity for the GGS. The issue of clearance of vegetation underneath also shall be taken up with KSEB as the clearance needed is only 5.2 m and in most of the areas the vegetation level would remain much lower.

Tourism, Interpretation and Conservation Education

All programmes shall be community based. They shall be designed to build up knowledge on wildlife and ecosystems and interpretation shall be designed to bring out the environmental services and focus of issues. At the end of the day the visitor should voluntarily crusade for conservation and should become an aroused practitioner of Constitutional Directive Principle Article 51A(g).

Trekking programmes, Night halt programmes, visit to watch tower and the nature awareness programmes conducted for the students, clubs, and other interested group are the activities related to tourism and conservation education in the Chinnar Wildlife Sanctuary. A one day tour package is conducted under the name “EXPLORE – THE WILD MUNNAR”. The facilities available for the programme are.

1. Nature Education Center at Chinnar.
2. Amenity centre at Chinnar.
3. Watch tower at Chinnar.
4. Interpretation centre at Karimutty
5. Tree houses at Karakkad and Koottar
6. Log houses at Koottar, Pambar, Jellimala, Thoovanam and Churulipetty.
7. Vasyapara Hut

The activities expect the nature education programmes are managed with the help of professional eco development committees (EDCs) of local dependent people.

Strategies and Activities

7.1. Environmental conservation awareness

- The interpretation centre at Karimutty shall be developed fully
- Engage a qualified resource person for Nature Education activities.

- Develop education materials for various target groups - leaflets, brochures, pamphlets, posters, movies, etc
- Conduct nature awareness camps for various target groups including people within and on the fringe.
- The amenity centre and dormitory at Chinnar shall be furnished by providing cots, beds etc.
- The log houses, tree tops, hut etc shall be maintained in proper condition.
- Construction of Eco shop, Toilet etc at Alampetty
- Upgrade the existing website and explore the possibility of online booking of facilities.
- Provide appropriate signages and display at strategic locations.
- Engage a wildlife educationist on contract basis.
- The EDC members involved in the tourism activities shall be provided continuous training.

7.2. Facilitating nature-based regulated tourism

- Engage trained resource persons through Anamudi FDA
- Capacity building & training to guides and staff on human behavior, identification of flora and fauna (butterflies, birds, animal evidences etc)
- Procure adequate equipments to be given to tourists on rent (binoculars, sleeping bags, solar lights, torches etc.)
- Create awareness among local communities / visitors to PA
- Legal Enforcement with fine to control littering of PA.
- Involvement of EDCs in removal of plastics as part of mutual commitment.
- Develop appropriate nature based tourism packages considering protection of PA and ensuring livelihood security of dependant community and PA management
- Prepare site specific micro plan for each package with baseline information and conduct annual impact assessment through participatory process.

The Wildlife Warden will conduct annual review of environmental conservation awareness programmes and nature-based regulated tourism activities.

ECODEVELOPMENT

Eco development is an important activity as the Sanctuary is inhabited by considerable tribal population spread out in 11 tribal settlements. Providing adequate livelihood options to the tribes forms an important part of PA management. Even though all the tribal settlements within the sanctuary are covered under eco development activities and there is good relationship with the people, expected results in terms of reduced dependency and increased participation in management are not readily visible.

The major problem related to people PA interface is making available sustainable livelihood for the depended communities. Firewood collection and grazing occurs in a manner detrimental to the management of PA. The NTFP collection by the people from the tribal settlements is not yet studied properly and the extent and impact not understood. There are many constraints for the people living in the tribal settlements. The Hill Pulaya Settlements Champakkad, Alampetty and Palapetty have limited agriculture and depend mainly on NWFP collection and Cattle rearing. This is mainly due to the fact that their lands are situated in dry reaches and lack adequate water resources. Suitable livelihood options are to be sought for them. In other settlements the main occupation is lemon grass cultivation with dependence on PA for firewood. The involvement of merchants of Marayoor in the marketing of lemon grass puts the people in dept trap. The settlements like Olikkudy and Mangappara are situated in such difficult terrain that their communication with the outside world is much difficult.

The help of Government agencies like Tribal department, Agriculture department, Agriculture University, education and research institution should be made available in order to fulfill the eco development initiative and PA management objectives.

The problems related to people-PA interface are lack of information on the extent of conflict between needs of tribes and management requirements, lack of adequate eco development programmes, lack of funds for implementing eco development programme, inadequate support team for implementing eco development programmes, absence of

information on needs and natural and cultural resources of local and ethnic communities and lack of training to staff.

Most of the activities prescribed in the micro plans of the EDC's are not implemented because of the lack of skill of people in such activities. Hence a revisiting of the existing micro plans is necessary and the activities should be implemented accordingly. The revisit of the micro plan shall be completed in the first year of the plan period.

The eco development zone will be overlapping with the buffer zone.

8.1. People – Protected Area Interface

To strengthen the People-PA interface, the following strategies and activities are proposed.

- The existing micro plans of EDC's shall be revisited and new micro plans shall be formulated.
- Suitable agricultural and land use pattern shall be evolved after conducting necessary studies.
- The agricultural practices shall be evolved so as to avoid wildlife conflict.
- Assist the tribal people in income generations from agriculture and also in processing and marketing of agricultural produces.
- Institution of crop insurance
- Seeking funds from various sources (Local bodies / other line departments/ Govt of India) through FDA.
- Identify and phase out the ecologically incompatible activities (especially the supply of goats) of line departments.
- Settlement of land rights and resource rights under 'Recognition of Forest Rights Act' may be completed and the demarcation of lands of tribes may be undertaken.
- Initiate dialogues with people for resettlement of tribal settlements at Olikkudy and Mangappara

- Deployment of adequate trained support team including social workers /voluntary services for micro planning and collating data on socio-economic status of people.
- Identification of the needs /aspirations and natural and cultural resources of local community during micro planning.
- The nature-based tourism packages may be designed and managed to provide livelihood security to the tribes.
- Imparting training to staff on micro planning, eco development concept, ecotourism including visit to other areas in the State and outside.
- Social workers shall be engaged for assisting in the implementation of Eco development activities

8.2. For regulating and control over grazing, firewood and NWFP collection, the following strategies are proposed.

8.2.1. Grazing

- Study and monitor the number, extent and impact of grazing
- Reduce number of cattle by providing alternate livelihood and encourage stall feeding
- Explore possibilities for disposal of goats.
- Ensure vaccination of cattle – twice a year
- Explore possibilities of fodder raising in community lands
- Form a user-group EDC with access rules.
- Move proposal for notifying veterinary hospitals near PA as supporting agency.

8.2.2. Firewood collection

- Study the extent and impact of firewood collection & lemon grass oil distillation
- Propose fuel wood plantation, wherever required within community land/ eco development zone.
- Provide energy-saving devices

- Form an user-group EDC

8.2.3. NWFP collection

- Study the extent and impact of NWFP collection (Honey, Amla, Asparagus, Eachampullu, etc)
- Evolve scientific/ sustainable collection methods
- Provide training to EDC members for scientific/ sustainable collection of NWFP resources & value addition
- Encourage people to limit collection of NWFP only in eco development zone and frame access rules for sustainable collection.
- Propose alternate livelihood to prevent unscientific/ unsustainable collection
- Encourage planting of NWFP & medicinal plant species within community land.

Grazing and collection of natural resources for commercial purposes are prohibited in the Sanctuary. At the same time the Tribal Rights Act permit traditional rights of people. Wildlife Warden may review the Management Plan on settlement of rights under Tribal Right Act and declaration of Critical Wildlife Habitat.

RESEARCH, MONITORING AND TRAINING

Research, monitoring and training are among the weakest areas in wildlife management. The need is acknowledged but there is very little progress. Research has mainly suffered due to lack of policy, clarity of objectives, priorities and therefore inadequate funding support; lack of adequate employment opportunities inclusive of reasonable career advancement prospects and therefore want of suitable personnel.

Research activities are conducted by various agencies, universities etc. with the permission of Forest department. Many research activities are funded by the forest department also. The research reports furnished after completion of studies are to be compiled and stored at the Division Head Quarters at Munnar. Necessary facilities shall be created at the Division Head Quarters for the same.

The Sanctuary was declared during 1984 and various studies have been conducted during the previous years. In view of the climate change pattern all over the world studies need to be done on various aspects to ascertain the changes. In order to accomplish the plan objectives, the following research, monitoring and training are proposed.

9.1. Research

1. Mapping of vegetation types to ascertain the present condition
2. Study & monitor the number, extent and impact of grazing
3. Study and document traditional knowledge of indigenous communities
4. Study the extent and impact of NWFP collection
5. Evolve scientific/ sustainable collection methods for NWFP management.
6. Study and identify invasive species (Lantana, Eupatorium, Parthenium) that have negative impact on ecosystem and evolve techniques for eco restoration.

7. Study and identify the spatial and temporal distribution of water sources and generate maps.
8. Study the extent and impact of firewood collection and lemon grass oil distillation.

9.2. Monitoring

1. Monitoring the population of Grizzled Giant Squirrel biennially.
2. Regular wildlife health monitoring
3. Annual census of wildlife
4. Monitoring of intrusion and regeneration of invasive species
5. Identify and monitor the special habitats/micro-habitats such as talush, cliff, dens, caves, snags, old growth forests and riparian forests for future habitat management.
6. The probability of developing a nodal centre for compiling, collecting and building up a scientific data base shall be explored. The nodal centre may be stationed at Munnar.

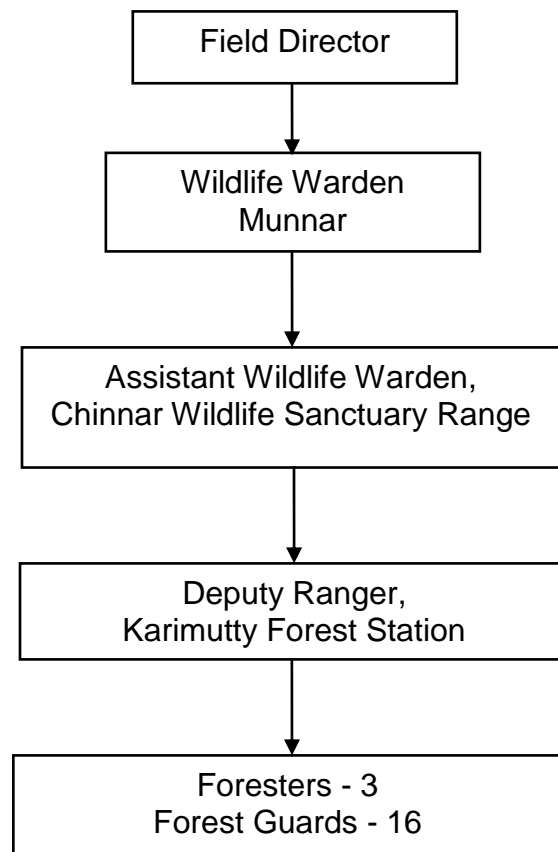
9.3. Training

1. Impart training to staff & EDC members on wildlife health monitoring
2. Provide training to EDC members for scientific/ sustainable collection of NWFP resources & value addition
3. Capacity building for staff in intelligence gathering, identifying wildlife article, acts, rules.
4. Capacity building & training to guides and staff on ecotourism
5. Impart training to staff on wildlife census techniques
6. Training on wildlife evidences, collection of biological materials and their interpretation.
7. Training in weapon handling and maintenance.
8. Training on modern fire fighting.

ORGANISATION AND ADMINISTRATION

10.1. Structure

The organizational structure of the Sanctuary is as shown below



10.2. Responsibilities

10.2.1. The Chinnar Wildlife Sanctuary is headed by the Wildlife Warden who has overall responsibility for the implementation of the Management Plan. A pocket field guide; in Malayalam language; with schedule of operations for the implementation of management plan will be developed and made available to the staff in the PA.

10.2.2. The Wildlife Warden will make arrangements to supply the below mentioned control forms (Annexure 11) to the Assistant Wildlife Warden, Deputy Ranger and Section Foresters and compile the information about the Park.

FORM – 1	Creation of new artificial waterholes
FORM – 2	Maintenance of waterholes: Natural
FORM – 3	Maintenance of waterholes: Artificial
FORM – 4	Restoration of habitat: weed control
FORM – 5	Restoration of habitat: Prescribed burning
FORM – 6	Restoration of habitat: Soil Conservation measures – initial operations and subsequent maintenance
FORM – 7	Animals: Measuring trends in populations
FORM – 8	Animals: New records
FORM – 9	Animals: Mortality other than that attributable to an offence
FORM – 10	Animals: Mortality attributed to poaching or an act of vandalism
FORM – 11	Animals: Predation on domestic livestock by wild carnivores
FORM – 12	Animals: Killing of a human by wildlife or injury caused
FORM – 13	Animals: Wildlife damage to private or public property
FORM – 14	NWFP collections: Plants and other produce
FORM – 15	Grazing of domestic livestock
FORM – 16	Inter-agency programmes: Agencies and schemes (Government)
FORM – 17	Programmes of NGOs
FORM – 18	Construction*/maintenance* of infrastructure: Roads and Bridges (*existing/new)
FORM – 19	Construction*/maintenance* of infrastructure: buildings (*existing/new)

FORM – 20	Development*/maintenance* of infrastructure: communication (*existing/new)
FORM – 21	Development*/maintenance* of infrastructure: vehicles (*existing/new)
FORM – 22	Developing infrastructure: construction of boundaries, Fences, EPTs, (*existing/new)
FORM – 23	Developing infrastructure: fire lines (*existing/new)
FORM – 24	Tourism
FORM – 25	Outbreak of fires
FORM – 26	Offence cases detected
FORM – 27	Incentives and awards
FORM – 28	Research projects under implementation through PA manpower with or without collaboration with other agencies
FORM – 29	Survey and inventories
FORM – 30	The Monitoring Programme
FORM – 31	Eco development

10.2.3. The Wildlife Warden, Munnar shall prepare Annual Plan of Operations and Schedule of Operations every year in the first week of April.

10.2.4. The Wildlife Warden shall not deviate from the Management Plan prescriptions without the prior permission in writing of the Chief Wildlife Warden.

10.2.5. The Wildlife Warden shall also take action for reviewing the Management Plan after five years.

CHAPTER 11

BUDGET FOR CHINNAR WILDLIFE SANCTUARY

Sl. No.	Para of Management Plan	Activity	Financial Requirement										Total	
			1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year		
1	6.3.1	Resettlement of tribal colonies at Olikkudi and Mangappara				300	300							600
2	6.4.1.1	Survey of boundaries and construction of cairns		1	1									2
3	6.4.1.1	Maintenance of cairns	2	2	2					3	3	3		15
4	6.4.1.2	Formation of new Forest Station at Ollavayal							40					40
5	6.4.1.3.2	Construction of anti poaching camp shed at Pothady/Njandalamala				6								6
6	6.4.1.3.3	Maintenance of offices, IB and Dormitory etc.	6	6	7	7	8	8	9	9	10	10		80
7	6.4.1.3.3	Construction of AWLW's office at Marayoor		18										18

8	6.4.1.3.3	Construction of AWLW's Quarters at Marayoor			20									20
9	6.4.1.3.3	Construction & furnishing of duplex quarters for Guards at Karimutty		18										18
10	6.4.1.4	Engaging Anti poaching mazdoors	30	30	40	40	50	50	60	60	70	70		500
11	6.4.1.6.1	Engaging mazdoors for Sandal protection	30	30	40	40	50	50	60	60	70	70		500
12	6.4.1.6.1	Enumeration of Sandal trees			1			1.5			2			4.5
13	6.4.1.6.2	Ganja raids	0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4		9.5
14	6.4.1.2	Salary of 1 Range Officer, 1 Dy Ranger, 3 Foresters & 16 Forest Guards	40	40	44	44	48	48	52	52	56	56		480
15	6.4.1.2	Salary of 1 Deputy ranger, 4 foresters and 16 forest guards for additional station proposed	30	30	35	35	40	40	45	45	50	50		400
16	6.4.1.3.1	Conducting protection camps by supplying field ration, amenities etc.	5	5	6	6	7	7	8	8	9	9		70

17	6.4.1.4	House rent for residential accommodation for children's of frontline staff	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	6
18	6.4.1.4	Supply of kerosene, field kit, mosquito net, torches to staff	2	2	2	2.5	2.5	2.5	2.5	3	3	3	25
19	6.4.1.5	Purchase of arms and ammunition	1	1			0.5			0.5		0.50	3.5
20	6.4.1.5	Purchase & Maintenance of wireless set and walkie-talkie	1	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	7
21	6.4.1.7.1	Providing solar charging system, maintenance of solar charging systems	1	1	1	1	1	0.5	0.25	0.25	0.25	0.25	6.5
22	6.4.1.7.2	Maintenance of Anti poaching camp sheds	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	3
23	6.4.1.7.6	Replacement of Jeeps, Motor, bikes	0.75	7	0.75						9		17.5
24	6.4.1.7.6	Maintenance of vehicles	5	5	6	6	7	7	8	8	9	9	70
25	6.4.1.7.4	Maintenance of trek paths	8	8	9	9	10	10	11	11	12	12	100
26	6.4.1.7.15	Purchase of equipments - Tents, Compass, GPS, Binoculars, Range Finder, Digital Camera, Camera Trap, Field Kit etc	1	1	1	1	1	1	1	1	1	1	10

27	6.4.1.7.10	Intelligence gathering and rewards to informers	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	2.5
28	6.4.1.7.10	Legal support in special cases.	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2
29	6.4.2.2.1	Creation of fire lines.	18	18	20	20	22	22	24	24	26	26	26	220
29	6.4.2.2.2	Controlled pre – burning	2	2	3	3	4	4	4	4	5	5	5	36
30	6.4.2.2.3	Engaging fire watchers during fire season	10	10	11	11	12	12	13	13	14	14	14	120
31	6.4.2.2.4	Participatory Fire Management	13.5	13.5	18	18	22	22	26	26	30	30	30	219
32	6.4.2.3	Awareness to Staff & EDC during fire season.	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	3.2
33	6.4.2.5	Purchase of fire fighting equipments (gum boots, fire resistant suit etc.)	0.25	0.25	0.5	0.5	0.75	0.75	1	1	1	1	1	7
34	6.4.3.2	Maintenance of water holes / check dams.	4	4	5	5	6	6	7	7	8	8	8	60
35	6.4.3.2	Mapping of water resources and preparation of drainage map.		1	1									2
36	6.4.3.2	Installation of automated weather station.			2.50			3						5.50
37	6.4.3.2.1	Soil & moisture conservation measures (Gully Plugging, Bunds)	2	2	2	2	2	2	3	3	3	3	3	25

38	6.4.3.2.2	Maintenance of water supply structures	5	5	5	3	3	3	3	4	4	4	39
39	6.4.4.2.2	Removal of exotic weeds	1	1	1	1	1.5	1.5	1.5	1.5	2	2	14
40	6.4.4.2.3	Planting in fragmented canopy regions			2			2			3		7
41	7.1	Development and maintenance of Interpretation centre at Karimutty	4	4	3	3	2	2	2	2	2	2	26
42	7.1	Furnishing of Amenity centre dormitory etc.		3	2								5
43	7.1	Construction of toilet, eco shop at Alampetty		10	5								15
44	7.1	Education & awareness materials.	0.5	0.5	0.5	0.75	0.75	0.75	0.75	0.9	0.9	0.9	7.5
45	7.1	Awareness camps	2.5	2.5	3	3	3.5	3.5	4	4	4.5	4.5	35
46	7.1	Up gradation and maintenance of websites.		0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2
47	7.1	Erection of signages at strategic location	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5
48	7.2	Engaging a resource person for awareness and nature based tourism through Anaimudi FDA	2	2	2.4	2.4	2.8	2.8	3.2	3.2	3.6	3.6	28
49	7.2	Training to staff and guides on Tourism	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2

50	7.2	Purchase of solar lights, torches, sleeping bags, tents, binoculars etc.	1	1	1	1	1	1	1	1	1	1	1	10
51	7.2	Preparation of micro plans for tourism packages	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2
52	8.1	Construction of elephant proof trenches / solar fences/ Elephant proof walls at Puthukudy, Chambakkad, Alampetty,	5	5	5	5	5	5	5	5	5	5	5	50
53	8.1	Compensation to victims of wildlife attack/ crop damage	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9		7
54	8.1	Revisiting of micro plans	0.75	0.75										1.5
55	8.1	Engaging social worker to assist in eco development activities	1.5	1.5	1.5	1.5	2	2	2	2	3	3		20
56	8.1	Eco development activities (as per micro plan)	2	2	3	3	4	4	5	5	6	6		40
57	8.1	Training to staff on eco development, micro planning and visits to other sites.	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2
58	8.2	Translocation/buying of domestic cattle/goats.	5.00	5.00	5.00	3.00	3.00	3.00	2.00	1.00	1.00	1.00		29.00

59	8.2	Study of suitable agricultural & land use pattern	0.5			0.75				1.25			2.50
60	8.2	Assisting the tribal people in income generation schemes and marketing	5.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	18.00
61	8.2	Design and manage nature based tourism	5.00	4.00	4.00	3.00	3.00	2.00	2.00	2.00			25.00
62	8.2.1	Study the impacts of grazing			1			0.5					1.5
63	8.2.1	Vaccination of cattle	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	2.5
64	8.2.2	Study the extent and impact of firewood collection			1								1
65	8.2.3	Study the extent and impact of NWFP collection		1	1								2
66	8.2.3	Training on scientific collection of NWFP & value addition	0.3	0.3	0.3								0.9
67	8.2.3	Planting of NWFP species in Homesteads		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	4.5
68	9.1	Mapping of vegetation type			2								2
69	9.1	Study & documentation of traditional knowledge of indigenous communities			1	1							2

70	9.1	Study and identify invasive species that have negative impacts on ecosystem				1.00								1
71	9.2	Monitoring the population of Grizzled Giant Squirrel		0.75		0.75		1		1		1.25		4.75
72	9.2	Wildlife health monitoring	2.5	2.5	3	3	3.5	3.5	4	4	4.5	4.5		35
73	9.2	Wildlife census	0.5	0.5	0.75	0.75	1	1	1.25	1.25	1.5	1.5		10
74	9.2	Identify and monitoring special habitat	0.5	0.5	0.5	0.5	0.75	0.75	0.75	0.75	1	1		7
75	9.3	Training to staff on weapon handling, fire fighting, census technique etc.	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		2.5
76	Chapter 6 & 7	Building maintenance	2	2	2	2	3	3	3	4	4	4		29
77	Chapter 6	Overhead and office expenses	2	2	3	3	4	4	5	5	6	6		40
		TOTAL	229.4	284.4	295.65	564.50	597.00	331.7	334.25	340.75	386.45	378.9		3745.5

Note: Wildlife Warden may sought funds from other sources (State Budget Head at present in operation)

PART III
ANNEXURES

Annexure – 1

Final Notification of Chinnar Reserve Forest

R.Dis.No.1414/42/Devpt.

It is hereby notified under section 18 of the Travancore Forest Act II of 1068 as amended by the Acts IV of 1071, IX of 1085, IV of 1089, VIII of 1097 and XII of 1112; that with effect from the date of publication of this Notification in the Gazette the tract specified in the subjoined schedule shall be deemed to be a Reserved Forest.

Cairns have been erected along the boundaries of the Reserve and correct description of the boundaries with reference to the cairns is hereto appended for the information of public

Huzur Cutcherry
Trivandrum, 26th May 1942.

C. P. Ramswami Iyer
Dewan

Name of Reserve : Chinnar Reserve

Revenue Division: Kottayam

Taluk: Devicolam

Pakuthies: Marayur and Kilanthur
(Anjanad Tract)

Extent: 34 Square miles and 595.62 acres

Situation: This Reserve is situated at the north-eastern most corner of Travancore State and comprises the whole of Survey Nos. 238/1/4, 244/1, 246/1, 247/1, 248/1, 249/1, 250/1 and 255/2 and a portion of survey Nos. 238/1/1 of Marayur Pakuthy and the whole of survey Nos. 320/1 to 332/1 and portions of Survey Nos. 333/1 and 1/1 of Kilanthur pakuthy, Devicolam Taluk.

BOUNDARIES DESCRIPTION

North:- Starting from cairn No.1 at the trijunction of the boundaries of Coimbatore District, Marayoor Pakuthy and Kannan Devan Hills at the North West corner of the Reserve, the line goes in a nearly north easterly direction for about 5643/4 chains along the Chinnar River to cairn No.2 at a State Boundary Survey Stone on the bank of the Chinnar River, thence more or less east- south east for about 2141/4 chains along the above said river to cairn No.3 at the State Boundary Survey Stone on the bank of the river side of that Survey No. for about 11/4 chains to cairn No.4 at its

south west corner. (This is also the Western most point of S.No.251/1/1). Thence nearly east along the south side of the S.No. 257/1/1 for about 333/4 chains passing cairns No. 5 to 15 to cairn No.16 at its south east corner. Thence nearly south for about 63/4 chains to cairn 17 thence nearly south for about 63/4 chains passing cairn No.18 and crossing the approach road to the P.W.D. camp shed to cairn No.19 at the right bank of the thodu flowing to Chinnar River – then nearly north along that thodu for about 103/4 chains to cairn No.20 at its junction with the Chinnar River (from cairn numbers 16 to 20 the boundary follows the Western, Southern and Eastern Boundaries of the area allowed for the P.W.D. excluding the same from the reserve.) thence nearly east along the Chinnar River for about 71/2 chains to cairn No.21, on its bank; thence nearly south east for about 43/4 chains passing cairn number No.22, 23 to cairn No.24 on the West side of the approach road to the P.W.D. camp shed; thence east by slightly south for about 3/4 chains crossing the above road to cairn No.24A; thence nearly east- south east for 1 chain to cairn No.24B; thence nearly north-north east for 31/2 chains to cairn No.24C, thence east for 3/4 chains to cairn No.24D, thence north for 11/2 chains to cairn No.24E, thence west for 3/4 chains to cairn No.25; thence nearly north west for about 11/4 chains crossing the northern outlet road to cairn No.26 on the right bank of the Chinnar river situated 81 links north west of the State Boundary Survey Stone between distance 438 and 500, (from cairn 21 to 26 the boundary follows the Western, Southern and Eastern boundaries of the area allowed for the Excise Office Cart Stand and tollgate excluding the same from the reserve); thence nearly east along the same river for about 11 chains to cairn No.27 at the Revenue Stone at the North West Corner of Survey 261/1; thence nearly South West along its West side for about 11/4 chains to cairn No.28 at its South West Corner, thence along the West, South and East sides of Survey No. 259/1 for about 63/4 chains passing cairn Nos. 29 to 31 to cairn No.32 at its North East corner; thence nearly East along the Chinnar River for about 721/2 chains to cairn No.34; it is junction of Pambar River with Chinnar River.

East:- Thence nearly South- South West along the left bank of the Pambar River for about 43/4 chains to cairn No. 36 situated on the left bank of Athioda stream at its confluence with the Pambar thence nearly South South-East along the Athioda Stream (the boundary between Travancore and Coimbatore District) for about 4511/4 chains to cairn 37 where Athiodai cross the State Boundary for about 1263/4 chains to cairn No.38 at the top of Jambu malai peak at the trijunction of Coimbatore and Madurai Districts and Travancore State (This peak is locally known as 'Chinna Chambu Malai').

South and West:- Thence nearly south west along the state boundary for about 38 chains to cairn No. 39 at the boundary stone at the north-east corner of survey No. 72/1 of Kothukombu Pakuthy at the trijunction of Keelanthur and Kottakombu Pakuthies of Devikulam Taluk and Palani Taluk of Madurai District (This place is locally known as Vellimalai); thence in the same direction for about 631/2 chains along the boundary between Keelanthur and Kottakombu Pakuthies to cairn No. 40 at "Chenkannimala" thence nearly West South-West along the above Pakuthy boundary for about 531/4 chains passing Velliyangiri hills to cairn No. 41 at the Village Boundary Stone at the trijunction of Kilanthur, Kootakombu and Kanthloor

Pakuthies (this place is also known as Vattachola lower); thence nearly North West for about 231/2 chains to cairn No. 42 at a Village Boundary Stone between Kanthaloor and Kilanthur Pakuthies, (this place is also known as Vattachola Upper) thence in same direction but more to the West for 30 chains to cairn No. 43 on the right bank of the Vannanthorai Stream ; thence nearly West North West along the right bank of the above stream for about 1091/2 chains to cairn No. 44 (here the stream leaves the boundary)) thence nearly North for about 21/2 chains to cairn No. 45 it has theodolite stone at the South East Corner of Survey No. 300/1 of Kilanthur Pakuthies thence along the East side of the above survey Number for about 9 chains passing cairn No.s 46 and 47 to cairn No. 85 of Vannanthorai Sandal Wood Reserve Block No. 11 at the theodolite stone at the North East Corner of Survey No. 300/1 thence along the Eastern, Northern and Western Boundaries of that reserve to its South West Corner at cairn No. 104 at a theodolite station on the right bank of the Kalikilavan Odai, thence nearly South West along the same bank of the said Oda for about 8 chains to its junction with the Vannanthorai River, thence along the right bank of the Vannanthorai River first nearly West North – West and then North-North West for about 1401/2 chains to cairn No. 48 at its junction with the Pambar River thence nearly North along the right bank of Pambar River for about 1071/2 chains to cairn No. 49 thence nearly North West for 21/2 chains crossing the Pambar River to cairn No. 50 on the left bank of Natchimuthu Odai at its confluence with the Pambar River: thence nearly South West along the left bank of the Natchimuthu Odai for about 831/4 chains to cairn No. 51 about 3/4 chains South of the theodolite stone at the South East Corner of Survey No. 256/1; thence nearly North West along the East side of the above Survey Number for 3 chains to cairn No. 52 at theodolite stone at its North East Corner; thence more or less West for its Eastern edge; thence more or less West for about about 7 chains to cairn No. 53 at the first quarter of the 29th mile of the near road on its Eastern edge; thence crossing the road for 1 chain to cairn No. 54 on its Western edge; thence along the same edge of the road first nearly West South West and then nearly North West for about 392 chains to cairn No. 65 where the Natchimuthu Odai crosses the above road; thence along the left bank of the same Odai for about 61/2 chains to cairn No. 56 on the Southern side of Survey No. 227/2; thence along and Southern side of Survey No. 227/2 and Southern, Eastern and Northern sides of Survey No. 227/1 for about 181/4 chains passing cairn No. 57 to 64 to cairn No. 65 at the North West Corner of Survey No. 227/1 on the left bank of the Natchimuthu Odai for about 483/4 chains to cairn No. 66 at the theodolite stone at the South West Corner of Survey No. 2881/2; thence skirting the Southern Eastern and Northern sides of the above Survey No. for about 261/4 chains passing cairn No. 67 to 75 to cairn No. 76 at the theodolite stone at the North West Corner of the Survey Number on the left bank of the Natchimuthu Odai; thence first nearly North West and then West North -West along the same bank of the above Odai for about 156 chains to cairn No. 77 on the same bank Nandulamalai thence nearly South West for about 160 chains through Sy. No. 286/1/1 of Marayoor Pakuthy passing cairn Nos. 78 to 80 to cairn No. 81 at a boundary stone on the boundary between the Kannan Devan Hills and Marayoor Pakuthies to the North of Kumarikal malai and to the East of Poovar thadam thence nearly North West along the above boundary for about 146 chains passing cairns 82 to 91 (this line crosses

the Poovar between cairn Nos. 85 and 86) to cairn No. 1 at the starting point on the Northern Boundary.

N.B: From cairn No. 1 to 36 and 50 to 1, the survey Nos. referred to are those of Marayur Pakuthy and the rest of Kanthalloor Pakuthy unless otherwise mentioned.

Right within the Reserve

Private Rights

The following registered holdings and other claims admitted by the Forest settlement officer within the reserve are excluded from the reserve by cutting ring boundaries and are treated as enclosures within the Reserve.

ENCLOSURE NO.1

Pakuthy	Name of the Owner	Sy.No.	Registered or unregistered.	Extent	
				Acre	Cents
Marayoor	Velappa Naicken Ramasway Naken and Kannan Chinnakannan	245/1	Registered	10	85
Total				10	85

BOUNDARY DESCRIPTION

North: Starting from cairn no1 at the north – west corner of the enclosure (at the north-west corner of Survey No. 245/1 of the Marayoor Pakuthy, Devicolam Taluk), the line goes nearly east-north-east along the northern side of the above Survey No. for about 22 ¼ chains passing cairn Nos. 2 to 6 to cairn No.7 at its north-east corner at a theodolite stone (cairn Nos. 2 to 6 are at theodolite stones).

East: Thence along the east side of survey No. 245/1 for about 4 chains to cairn No.8 at a theodolite stone at the south-western corner of Survey No.246/1.

South: Thence nearly west north-west along the southern side of Survey No.245/1 for about 22 chains passing cairn Nos. 9 to 14 to cairn No.15 at the south-west corner of the above Survey No. (Cairn Nos. 9 to 14 are at Theodolite stones).

West: Thence along the western side of a survey No.245/1 for about 3 ¼ chains to cairn No.1 at the starting point.

ENCLOSURE NO.II (OLLAVAYAL)

Pakuthy	Name of the Owner	Sy.No	Sub Dn. No.	Registered or unregistered.	Extent	
					Acre	Cents
Keezhanthur	Chukiri pazhani Muttiyan	302/1	¾	Registered	6	07
-do-	-do-	303/1	¾	-do-	1	77
Total					7	84

BOUNDARY DESCRIPTION

North: Starting from cairn No.1 at the north-west corner of Survey No.302/1/3/4 of Kilanthur Pakuthy the line goes nearly south-east along the north side of the above survey number for about 12 chains passing cairn Nos. 2 and 3 to cairn No.4 at its north-east corner, thence more or less south along the east side of survey No.3021/3/3/4 for about 3 chains to cairn No.5 at the north-west corner of survey No.303/1/3/4, thence along the north side of the above Survey No. for about 4 chains passing cairn No. 6 to cairn No.7 at its north-east corner.

East: Thence nearly south-south-west along the east side of survey No.303/1/3/4 for about 5 chains passing cairn Nos. 8 and 9 to cairn No.10 at the south-east corner of the above Survey No. (cairn No.8 is at a theodolite stone).

South: Thence nearly north-west along the south side of survey Nos. 303/1/3/4 and 302/1/3/4 for about 11 ¼ chains passing cairn Nos. 11 to 15 to cairn No.16 (cairn nos. 12 and 15 are at theodolite stones).

West: Thence nearly north-north-west along the west side of survey nos. 302/1/3/4 for about 7 ¼ chains passing cairn No.17 to cairn No.18; thence nearly north-east along the west side of the above Survey No. for about 2 ¼ chains to cairn No.1 the starting point on the north boundary (cairn No.17 is at a theodolite stone).

ENCLOSURE NO.III

Pakuthy	Name of the Owner	Sy. No.	Registered or unregistered	Extent	
				Acre	Cents
Marayoor	Karuppan Chanthan, Karuppanan, Pazhani, Pazhani, Karuppanan, Pazhanilinkdan, Karupan pazhani, Chuppayan	238/1/3	Registered	2	76

BOUNDARY DESCRIPTION

North: Starting from cairn No. 1 at the theodolite stone at the North-West corner of Survey No.238/1/3 of the Marayur pakuthy the line goes nearly east along the north side of the above survey No. for about 5 ½ chains to cairn No. 2 at its north-east corner at a theodolite stone.

East: Thence along the east side of the same survey No. first nearly south for about 2 chains to cairn No.3 at a theodolite stone and then nearly south – south-west for about 5 ¾ chains to cairn No.4 at the theodolite stone at the south-east corner of the Survey No.

South: Thence nearly south-west along the south side of the survey No.2 chain to cairn No.5 at the theodolite stone at the south west corner of the Survey No.

West: Thence nearly north-north-west along the west side of the Survey No. for about 7 ¼ chains passing cairn No.6 at a theodolite stone to cairn No.1 at the starting point on the northern boundary.

ENCLOSURE NO IV

Premises and land occupied by the P.W.D coolly line adjoining the eastern side of the northern outlet road at the 35 mile 1st quarter and about 5 chain north-east of the 34th mile stone.

Pakuthy	Name of the Owner	Sy.No.	Registered or unregistered.	Extent	
				Acre	Cents
Marayur	Premises and land occupied by the P.W.D Coolly line.	Portion of 238/1/1	Unregistered	0	50.50

BOUNDARY DESCRIPTION

North: Starting from Cairn No. 1 at the north west corner of the Enclosure, the line goes nearly east for 2 ¼ chains to Cairn No. 2 at its north east corner.

East: Thence nearly south for 2 ¼ chains to cairn No. 3 at its south east corner

South: Thence nearly west for 2 ¼ chains to cairn no. 4 at its south west corner.

West: Thence nearly north for 2 ¼ chains to cairn no. 1 the starting point on the northern boundary

ENCLOSURE NO V

Premises and land occupied by the tothering shed for bulls adjoining the northern outlet road at the 31st Mile 3rd Quarter under the charge of the PWD.

Pakuthy	Name of the Owner	Sy.No.	Registered or unregistered.	Extent	
				Acre	Cents
Marayur	Premises and land occupied by the P.W.D as tothering shed	Portion of 238/1/1	Unregistered	0	50.50

BOUNDARY DESCRIPTION

North: Starting from Cairn No. 1 at the north west corner of the Enclosure, the line goes nearly east for 2 ¼ chains to Cairn No. 2 at its north east corner.

East: Thence nearly west for 2 ¼ chains to cairn No. 3 at its south east corner

West: Thence nearly north for 2 ¼ chains to cairn no. 1 the starting point on the northern boundary

South: Thence nearly west for 2 ¼ chains to cairn no. 4 at its south west corner.

PUBLIC RIGHTS

The following roads and footpaths are also admitted within the Reserve for the use of public and the holders of lands admitted inside the Reserve:-

1. The northern outlet road from 29th Mile 1st Quarter at Cairn No: 54 on the left bank of the Natchimuthu Odai to the Travancore boundary at Chinnar near Cairn No. 25

The total width allowed for the road including all the quarries necessary for the use of the PWD and the space for cutting north for maintenance of the road is 1 chain (66 feet i.e., 33 feet on the upper side and 18 feet for the road way proper, side rains etc and 15 feet on the lower side).

Description: The above road enters the Reserve between cairn nos 53 and 54 at the 29th Mile 1st Quarter on the outer boundary of the Reserve and goes more or less in a north easterly direction for about 8 ½ miles and leaves the Reserve between cairn nos 25 and 26 on the northern boundary.

2. A ROAD FROM THE EXCISE QUARTERS TO THE PWD CAMPSHED

The length of the road passing through the Reserve is about 20 ½ chains.

Description: Starting from a point about 170 links east of cairn no. 18 on the outer boundary of the Reserve the road goes first south and then north easterly direction for about 20 ½ chains and leaves the Reserve between cairn nos 24 and 24 A.

3. THE FOOTPATH STARTING FROM CAIRN NO. 16 OF THE OUTER BOUNDARY AND GOING TO CAIRN NO. 8 OF THE ENCLOSURE NO. I

The total length of the footpath is about 130 chains, and the uniform width 5 feet.

Description: Starting from cairn no. 16 of the outer boundary of the Reserve the footpath goes westwards through the Reserve along the southern side of Sy. No: 257/1/1 northern side of Sy. No: 238/1 and southern sides of Sy. Nos. 250/1, 248/1, 247/1, 246/1 and 245/1 for about 130 chains and meets cairn no. 8 at the south east corner of enclosure no. I.

4. THE FOOTPATH LEADING TO ENCLOSURE NO: III

The total length of the footpath is about 8 ¼ chains and the uniform width 5 feet.

Description: Starting from cairn no. 72 on the outer boundary of the Reserve the footpath goes in a north easterly direction for about 8 ¼ chains and enters the enclosure no. III at cairn no. 1 at the North West corner of the enclosure.

5. THE FOOTPATH LEADING TO ENCLOSURE NO: II

The total length of the footpath is about 3 chains and the uniform width 5 feet.

Description: Starting from cairn no. 15 on the southern boundary of the enclosure the footpath goes in a south western direction for about 3 chains to Vannanthorai River.

OTHER RIGHTS

1. The rights allowed to Hillmen under rule (rule not legible in the notification available) 4-12-1911 as per Section 60 of the Forest Act are allowed to the headman and members of the hillmen settlements in the Reserve.
2. Government in G.O. (Ms) 642/63 Agri. Dated (date not legible in the notification available) 1963 has ordered to transfer 110 acres of land at Champakad to Harijan Department.

Notification of Chinnar Wildlife Sanctuary

Kerala Gazette No. 37 dated 18th September 1984

PART I



GOVERNMENT OF KERALA
Agriculture (Forest Miscellaneous) Department
NOTIFICATION

Section IV

G.O. (P) No. 229/84/AD

*Dated, Trivandrum,
4th August, 1984*

S.R.O No. 1054/84 – Whereas the Government of Kerala consider that the area, the situation and limits of which are specified in the schedule below is of adequate ecological, faunal, floral, geomorphological, natural and zoological significance;

Now, therefore, in exercise of the powers conferred by subsection (1) of Section 18 of the Wildlife (Protection) Act, 1972 (Central Act 53 of 1972), the Government of Kerala hereby declare the said area to be a sanctuary known as “Chinnar Wildlife Sanctuary“ for the purpose of protecting, propogating and developing Wild Life and its environment.

SCHEDULE

District : Idukki

Taluk: Devikulam

Name of Forest: Chinnar Reserve

Villages: Marayoor – Kilanthur

Extent of the area: 90.442 Sq.Km

Situation and Limits:

North:- Starting from cairn No.1 at the trijunction of the boundaries of Coimbatore District, Marayoor Pakuthy and Kannan Devan Hills at the North West corner of the Reserve, the line goes in a nearly north easterly direction for about 5643/4 chains along the Chinnar River to cairn No.2 at a State Boundary Survey Stone on the bank of the Chinnar River, thence more or less east- south east for about 2141/4 chains along the above said river to cairn No.3 at the State Boundary Survey Stone on the

bank of the river side of that Survey No. for about $11\frac{1}{4}$ chains to cairn No.4 at its south west corner. (This is also the Western most point of S.No.251/1/1). Thence nearly east along the south side of the S.No. 257/1/1 for about $33\frac{3}{4}$ chains passing cairns No. 5 to 15 to cairn No.16 at its south east corner. Thence nearly south for about $6\frac{3}{4}$ chains to cairn 17 thence nearly south for about $6\frac{3}{4}$ chains passing cairn No.18 and crossing the

approach road to the P.W.D. camp shed to cairn No.19 at the right bank of the thodu flowing to Chinnar River – then nearly north along that thodu for about $10\frac{3}{4}$ chains to cairn No.20 at its junction with the Chinnar River (from cairn numbers 16 to 20 the boundary follows the Western, Southern and Eastern Boundaries of the area allowed for the P.W.D. excluding the same from the reserve.) thence nearly east along the Chinnar River for about $7\frac{1}{2}$ chains to cairn No.21, on its bank; thence nearly south east for about $4\frac{3}{4}$ chains passing cairn number No.22, 23 to cairn No.24 on the West side of the approach road to the P.W.D. camp shed; thence east by slightly south for about $\frac{3}{4}$ chains crossing the above road to cairn No.24A; thence nearly east- south east for 1 chain to cairn No.24B; thence nearly north-north east for $3\frac{1}{2}$ chains to cairn No.24C, thence east for $\frac{3}{4}$ chains to cairn No.24D, thence north for $1\frac{1}{2}$ chains to cairn No.24E, thence west for $\frac{3}{4}$ chains to cairn No.25; thence nearly north west for about $1\frac{1}{4}$ chains crossing the northern outlet road to cairn No.26 on the right bank of the Chinnar river situated 81 links north west of the State Boundary Survey Stone between distance 438 and 500, (from cairn 21 to 26 the boundary follows the Western, Southern and Eastern boundaries of the area allowed for the Excise Office Cart Stand and tollgate excluding the same from the reserve); thence nearly east along the same river for about 11 chains to cairn No.27 at the Revenue Stone at the North West Corner of Survey 261/1; thence nearly South West along its West side for about $1\frac{1}{4}$ chains to cairn No.28 at its South West Corner, thence along the West, South and East sides of Survey No. 259/1 for about $6\frac{3}{4}$ chains passing cairn Nos. 29 to 31 to cairn No.32 at its North East corner; thence nearly East along the Chinnar River for about $72\frac{1}{2}$ chains to cairn No.34; it is junction of Pambar River with Chinnar River.

East:- Thence nearly South- South West along the left bank of the Pambar River for about $4\frac{3}{4}$ chains to cairn No. 36 situated on the left bank of Athioda stream at its confluence with the Pambar thence nearly South South-East along the Athioda Stream (the boundary between Travancore and Coimbatore District) for about $45\frac{11}{4}$ chains to cairn 37 where Athiodai cross the State Boundary for about $126\frac{3}{4}$ chains to cairn No.38 at the top of Jambu malai peak at the trijunction of Coimbatore and Madurai Districts and Travancore State (This peak is locally known as ‘Chinna Chambu Malai’).

South and West:- Thence nearly south west along the state boundary for about 38 chains to cairn No. 39 at the boundary stone at the north-east corner of survey No. 72/1 of Kothukombu Pakuthy at the trijunction of Keelanthur and Kottakombu Pakuthies of Devikulam Taluk and Palani Taluk of Madurai District (This place is locally known as Vellimalai); thence in the same direction for about $63\frac{1}{2}$ chains along the boundary between Keelanthur and Kottakombu Pakuthies to cairn No. 40 at “Chenkannimala” thence nearly West South-West along the above Pakuthy boundary for about $53\frac{1}{4}$ chains passing Velliyangiri hills to cairn No. 41 at the

Village Boundary Stone at the trijunction of Kilanthur, Kootakombu and Kanthloor Pakuthies (this place is also known as Vattachola lower); thence nearly North West for about 231/2 chains to cairn No. 42 at a Village Boundary Stone between Kanthloor and Kilanthur Pakuthies, (this place is also known as Vattachola Upper) thence in same direction but more to the West for 30 chains to cairn No. 43 on the right bank of the Vannanthorai Stream ; thence nearly West North West along the right bank of the above stream for about 1091/2 chains to cairn No. 44 (here the stream leaves the boundary)) thence nearly North for about 21/2 chains to cairn No. 45 it has theodolite stone at the South East Corner of Survey No. 300/1 of Kilanthur Pakuthies thence along the East side of the above survey Number for about 9 chains passing cairn No.s 46 and 47 to cairn No. 85 of Vannanthorai Sandal Wood Reserve Block No. 11 at the theodolite stone at the North East Corner of Survey No. 300/1 thence along the Eastern, Northern and Western Boundaries of that reserve to its South West Corner at cairn No. 104 at a theodolite station on the right bank of the Kalikilavan Odai, thence nearly South West along the same bank of the said Oda for about 8 chains to its junction with the Vannanthorai River, thence along the right bank of the Vannanthorai River first nearly West North – West and then North-North West for about 1401/2 chains to cairn No. 48 at its junction with the Pambar River thence nearly North along the right bank of Pambar River for about 1071/2 chains to cairn No. 49 thence nearly North West for 21/2 chains crossing the Pambar River to cairn No. 50 on the left bank of Natchimuthu Odai at its confluence with the Pambar River: thence nearly South West along the left bank of the Natchimuthu Odai for about 831/4 chains to cairn No. 51 about 3/4 chains South of the theodolite stone at the South East Corner of Survey No. 256/1; thence nearly North West along the East side of the above Survey Number for 3 chains to cairn No. 52 at theodolite stone at its North East Corner; thence more or less West for its Eastern edge; thence more or less West for about about 7 chains to cairn No. 53 at the first quarter of the 29th mile of the near road on its Eastern edge; thence crossing the road for 1 chain to cairn No. 54 on its Western edge; thence along the same edge of the road first nearly West South West and then nearly North West for about 392 chains to cairn No. 65 where the Natchimuthu Odai crosses the above road; thence along the left bank of the same Odai for about 61/2 chains to cairn No. 56 on the Southern side of Survey No. 227/2; thence along and Southern side of Survey No. 227/2 and Southern, Eastern and Northern sides of Survey No. 227/1 for about 181/4 chains passing cairn No. 57 to 64 to cairn No. 65 at the North West Corner of Survey No. 227/1 on the left bank of the Natchimuthu Odai for about 483/4 chains to cairn No. 66 at the theodolite stone at the South West Corner of Survey No. 2881/2; thence skirting the Southern Eastern and Northern sides of the above Survey No. for about 261/4 chains passing cairn No. 67 to 75 to cairn No. 76 at the theodolite stone at the North West Corner of the Survey Number on the left bank of the Natchimuthu Odai; thence first nearly North West and then West North -West along the same bank of the above Odai for about 156 chains to cairn No. 77 on the same bank Nandulamalai thence nearly South West for about 160 chains through Sy. No. 286/1/1 of Marayoor Pakuthy passing cairn Nos. 78 to 80 to cairn No. 81 at a boundary

stone on the boundary between the Kannan Devan Hills and Marayoor Pakuthies to the North of Kumarikal malai and to the East of Poovar thadam thence nearly North West along the above boundary for about 146 chains passing cairns 82 to 91 (this line crosses the Poovar between cairn Nos. 85 and 86) to cairn No. 1 at the starting point on the Northern Boundary.

By order of the Governor,

S.GOPALAN,
Agricultural Production Commissioner
and Secretary to Government Agriculture and Forests

Explanatory Note

(This does not form part of the notification, but it is included to indicate its general purport)

In G.O Rt. No. 180/84/AD dated 19-1-1984 Government have constituted Circle Level Committees to study forest areas in the Circles and to identify areas which are either rich in wildlife or suitable for development as Wildlife Sanctuaries/National Parks. Based on the suggestion of the Circle Level Committee of the High Range Circle Kottayam, the State Wildlife Advisory Board has recommended that the Chinnar Reserve area be declared as a sanctuary. Government have accepted the recommendation of the State Wildlife Advisory Board. This notification is intended to achieve the above object

Notification of Karimutty Forest Station

കേരള സർക്കാർ

സംഗ്രഹം

വനം-വന്യജീവി വകുപ്പ് - മറയൂർ വനമേഖലയിലെ ചന്ദന മരങ്ങൾ സംരക്ഷിക്കുന്നതിനായി പുതിയ ചന്ദന വന ഡിവിഷനും റെയിഞ്ചുകളും ഫോറസ്റ്റ് സ്റ്റേഷനുകളും രൂപീകരിച്ചുകൊണ്ടും തസ്തികകൾ സൃഷ്ടിച്ചുകൊണ്ടും ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു.

വനം വന്യജീവി (എഫ്) വകുപ്പ്

ജി.ഒ (എം.എസ്) 67/2005/വനം തീയതി, തിരുവനന്തപുരം ജൂൺ 8,2005

പരാമർശം : അഡീഷണൽ പ്രിൻസിപ്പൽ ചീഫ് ഫോറസ്റ്റ് കൺസർവേറ്ററുടെ 21.2.2005, 2.5.2005 എന്നീ തീയതികളിലെ ഇ1- 1000/05 നമ്പർ കത്തുകൾ.

ഉത്തരവ്

കേരളത്തിൽ ചന്ദന മരങ്ങൾ കൂടുതലായി കണ്ടുവരുന്ന മറയൂർ, കാന്തല്ലൂർ, മൂന്നാർ വന്യജീവി ഡിവിഷൻ എന്നീ വനമേഖലകളിൽ ചന്ദന കള്ളക്കടത്ത് വ്യാപകമായിതീർന്നിരിക്കുന്ന സാഹചര്യത്തിൽ ചന്ദന മരങ്ങളുടെ സംരക്ഷണം ഉറപ്പുവരുത്തേണ്ടതിനായി നിലവിലുള്ള ഭരണ സംവിധാനം ശക്തിപ്പെടുത്തേണ്ടതുണ്ടെന്ന് സർക്കാർ വിലയിരുത്തി. ചന്ദന മോഷണം ഫലപ്രദമായി നേരിടുന്നതിന് സ്ഥിരസംവിധാനമെന്ന നിലയിൽ മറയൂർ ആസ്ഥാനമാക്കി ഒരു ചന്ദന വന ഡിവിഷനും അതിന്റെ പരിധിയിൽ നിലവിലുള്ള മറയൂർ റേഞ്ചും മറയൂർ, കാന്തല്ലൂർ എന്നീ ഫോറസ്റ്റ് സ്റ്റേഷനുകളും നിലനിർത്തുന്നതിനും അതിന് പുറമെ പുതുതായി ഒരു റേഞ്ചും (കാന്തല്ലൂർ), നാച്ചിവയൽ, വനാൻ തുരൈ എന്നീ ഫോറസ്റ്റ് സ്റ്റേഷനുകളും സ്ഥാപിക്കുന്നതിനും കൂടാതെ മൂന്നാർ വന്യ ജീവി ഡിവിഷനിലെ ചിന്നാർ വൈൽഡ് ലൈഫ് സാംങ്ങ്ചുറി, ഇരവികുളം നാഷണൽ പാർക്ക് എന്നീ സംരക്ഷിത വനമേഖലകളിൽ രണ്ട് പുതിയ ഫോറസ്റ്റ് സ്റ്റേഷനുകൾ സ്ഥാപിക്കുന്നതിനും ഇതിലേക്കായി താഴെ പറയുന്ന തസ്തികകൾ സ്രിഷ്ടിച്ചുകൊണ്ടും ഉത്തരവാകുന്നു. പുനർവിന്യാസം വഴി കണ്ടെത്തിയ തസ്തികകൾ പ്രത്യേകം രേഖപ്പെടുത്തിയിരിക്കുന്നു.

തസ്തിക	നിലവിലുള്ള തസ്തിക	പുതുതായി അനുവദിച്ച തസ്തിക	ആകെ തസ്തികകൾ
മറയൂർ ചന്ദന വന ഡിവിഷൻ			
അസിസ്റ്റന്റ് ഫോറസ്റ്റ് കൺസർവേറ്റർ	0	1 (പുനർവിന്യാസംവഴി)	1 (പുനർവിന്യാസംവഴി - തിരുവനന്തപുരം ഫോറസ്റ്റ് ആസ്ഥാനത്തുള്ള അസിസ്റ്റന്റ് ഫോറസ്റ്റ് കൺസർവേറ്റർ (ലെയിസൺ))
സീനിയർ സൂപ്രണ്ട്	0	1 (പുനർവിന്യാസംവഴി)	1 (പുനർവിന്യാസംവഴി - തിരുവനന്തപുരം ഫോറസ്റ്റ് ആസ്ഥാനത്തുനിന്നും)
ഹെഡ് അക്കൗണ്ടന്റ്	0	1 (പുനർവിന്യാസംവഴി)	1 (പുനർവിന്യാസംവഴി - തെന്മല റെയിഞ്ചിൽ നിന്നും)
എൽ.ഡി / യു.ഡി ക്ലാർക്ക്	0	2	2
ടൈപ്പിസ്റ്റ്	0	1	1
ഡ്രൈവർ	0	1	1
ശിപായി	0	1	1
ആകെ	0	8 (3 പുനർവിന്യാസം)	8 (3 പുനർവിന്യാസം ഉൾപ്പെടെ)
മറയൂർ റെയിഞ്ച് (നിലവിലുള്ളത്)			
റെയിഞ്ച് ഓഫീസർ	1	0	1
എൽ.ഡി / യു.ഡി ക്ലാർക്ക്	1	1	2
ഡ്രൈവർ	1	0	1
ശിപായി	1	0	1
ആകെ	4	1	5
മറയൂർ ഫോറസ്റ്റ് സ്റ്റേഷൻ (നിലവിലുള്ളത്)			
ഡെപ്യൂട്ടി റെയിഞ്ചർ	1	0	1
ഫോറസ്റ്റർ	3	1	4
ഫോറസ്റ്റ് ഗാർഡ്	12	2	14
ഡ്രൈവർ	1	0	1
ആകെ	17	3	20
നാച്ചുവയൽ ഫോറസ്റ്റ് സ്റ്റേഷൻ (പുതിയത്)			
ഡെപ്യൂട്ടി റെയിഞ്ചർ	0	1 (പുനർവിന്യാസംവഴി)	1 (പുനർവിന്യാസംവഴി - സെൻ ട്രൽ നർസറി, കുളത്തുപുഴ നിന്നും)
ഫോറസ്റ്റർ	0	3	3
ഫോറസ്റ്റ് ഗാർഡ്	0	14	14
ഡ്രൈവർ	0	1	1
ആകെ	0	19 (1 പുനർവിന്യാസം)	19 (1 പുനർവിന്യാസം ഉൾപ്പെടെ)

കാന്തല്ലൂർ റെയിഞ്ച് (പുതിയത്)			
റെയിഞ്ച് ഓഫീസർ	0	1 (പുനർവിന്യാസംവഴി)	1 (പുനർവിന്യാസംവഴി - തിരുവനന്തപുരം ഫോറസ്റ്റ് ആസ്ഥാനത്തുള്ള എ.സി.എം യൂണിറ്റിൽ നിന്നും)
എൽ.ഡി / യു.ഡി ക്ലർക്ക്	0	2	2
ഡ്രൈവർ	0	1	1
ശിപായി	0	1	1
ആകെ	0	5 (1 പുനർവിന്യാസം)	5 (1 പുനർവിന്യാസം ഉൾപ്പെടെ)
കാന്തല്ലൂർ ഫോറസ്റ്റ് സ്റ്റേഷൻ (നിലവിലുള്ളത്)			
ഡെപ്യൂട്ടി റെയിഞ്ചർ	1	0	1
ഫോറസ്റ്റർ	3	0	3
ഫോറസ്റ്റ് ഗാർഡ്	12	0	12
ഡ്രൈവർ	1	0	1
ആകെ	17	0	17
വണ്ണാത്തുറ ഫോറസ്റ്റ് സ്റ്റേഷൻ (പുതിയത്)			
ഡെപ്യൂട്ടി റെയിഞ്ചർ	0	1 (പുനർവിന്യാസംവഴി)	1 (പുനർവിന്യാസംവഴി തിരുവനന്തപുരം ഫോറസ്റ്റ് ആസ്ഥാനത്തുള്ള കൺ ട്രോൾ റൂമിൽ നിന്നും)
ഫോറസ്റ്റർ	0	3	3
ഫോറസ്റ്റ് ഗാർഡ്	0	12	12
ഡ്രൈവർ	0	1	1
ആകെ	0	17 (1 പുനർവിന്യാസം)	17 (1 പുനർവിന്യാസം ഉൾപ്പെടെ)
മൂന്നാർ വന്യജീവി ഡിവിഷൻ			
ചിന്നാർ വൈൽഡ് ലൈഫ് സാംഗ്ങ് ചുറ്റിയുടെ പരിധിയിൽ കരിമുട്ടി ഫോറസ്റ്റ് സ്റ്റേഷൻ			
ഡെപ്യൂട്ടി റെയിഞ്ചർ	0	1	1
ഫോറസ്റ്റർ	2	1	3
ഫോറസ്റ്റ് ഗാർഡ്	7	9	16
ഡ്രൈവർ	0	0	0
ആകെ	9	11	20

ഇരവികുളം നാഷണൽ പാർക്കിന്റെ പരിധിയിൽ ചട്ടമൂന്നാർ ഫോറസ്റ്റ് സ്റ്റേഷൻ			
ഡെപ്യൂട്ടി റെയിഞ്ചർ	0	1	1
ഫോറസ്റ്റർ	2	1	3
ഫോറസ്റ്റ് ഗാർഡ്	6	10	16
ഡ്രൈവർ	0	0	0
ആകെ	8	12	20
മൊത്തം താസ്തിക	55	76 (6 പുനർവിന്യാസം)	131 (6 പുനർവിന്യാസം ഉൾപ്പെടെ)

ഗവർണ്ണറുടെ ഉത്തരവിൻ

പ്രകാരം

എൽ. രാധാകൃഷ്ണൻ
സെക്രട്ടറി.

1. പ്രിൻസിപ്പൽ ചീഫ് ഫോറസ്റ്റ് കൺസർവേറ്റർ, തിരുവനന്തപുരം.
2. അഡീഷണൽ പ്രിൻസിപ്പൽ ചീഫ് ഫോറസ്റ്റ് കൺസർവേറ്റർ, തിരുവനന്തപുരം.
3. ചീഫ് ഫോറസ്റ്റ് കൺസർവേറ്റർ (വന്യ ജീവി), തിരുവനന്തപുരം.
4. ചീഫ് ഫോറസ്റ്റ് കൺസർവേറ്റർ (വിജിലൻസ്), തിരുവനന്തപുരം.
5. ഡിവിഷണൽ ഫോറസ്റ്റ് ഓഫീസർ, മൂന്നാർ ഫോറസ്റ്റ് ഡിവിഷൻ.
6. ഡിവിഷണൽ ഫോറസ്റ്റ് ഓഫീസർ, മൂന്നാർ വന്യജീവി ഡിവിഷൻ.
7. അക്കൗണ്ടന്റ് ജനറൽ (എ & ഇ) / (ആഡിറ്റ്), തിരുവനന്തപുരം.
8. ധനകാര്യ വകുപ്പ് (16.5.2005 തീയതിയിലെ 32397 / എ ഡബ്ളിയു എ 2/05/ധന.നമ്പർ നോട്ട്)
9. പൊതുഭരണ (എസ്.സി) വകുപ്പ് (8.06.2005 ലെ മന്ത്രിസഭാ തീരുമാനം ഇനം നം 675)
10. പബ്ലിക് റിലേഷൻസ് വകുപ്പ്.
11. കരുതൽ ശേഖരം / അഫീസ് കോപ്പി.

ഉത്തരവിൻ

പ്രകാരം

സെക്ഷൻ

ആഫീസർ.

Flora Of Chinnar Wildlife Sanctuary

RANUNCULACEAE

1. *Anemone rivularis* Buch.-Ham. Ex DC.,
2. *Clematis gouriana* Roxb. Ex DC.,
3. *Clematis munroiana* Wight.
4. *Clematis wightiana* Wall. Ex Wight & Arn.,
5. *Naravelia zeylanica* (L.) DC.,
6. *Ranunculus reniformis* Wall. Ex Wight & Arn.,

ANNONACEAE

7. *Alphonsea sclerocarpa* Thw., Enum.
8. *Milusa eriocarpa* Dunn in Gamble,
9. *Milusa tomentosa* (Roxb.) Sinclair,
10. *Mitrephora heyneana* (Hook. F. & Thoms.) Thw.
11. *Polyalthia cerasoides* (Roxb.) Bedd.,
12. *Uvaria narum* (Dunal) Wall. Ex Wight & Arn.,

MENIPERMACEAE

13. *Anamirta cocculus* (L.) Wight & Arn.
14. *Cissampelos pareira* L. var. *hirsute* (Bunch.-Ham. Ex DC) Forman
15. *Pachygone ovata* (Poir.) Miers ex Hook. f. & Thoms.,
16. *Stephania japonica* (Thumb.) Miers,
17. *Tinospora cordifolia* (Willd.) Miers ex Hook. f. & Thoms.,

PAPAVERACEAE

18. *Argemone mexicana* L.,

BRASSICACEAE

19. *Cardamine trichocarpa* Hochst. Ex A. Rich.,

CAPPARIDACEAE

20. *Cadaba fruticosa* (L.) Druce
21. *Capparis brevispina* DC.
22. *Capparis divaricata* Lam.,
23. *Capparis grandis* L. f.,
24. *Capparis roxburghii* DC.,
25. *Capparis sepiaria* L.,
26. *Capparis zeylanica* L.,
27. *Cleome aspera* Koen. ex DC.,
28. *Cleome gynandra* L.,
29. *Cleome monophylla* L.,
30. *Cleome viscosa* L.,
31. *Crataeva adansonii* DC. ssp. *odora* (Buch.-Ham.) Jacobs.

VIOLACEAE

32. *Hybanthus enneaspermus* (L.) F.v. Muell.,
33. *Viola betonicifolia* J.E. Smith
34. *Viola pilosa* Blume ,

COCHLOSPERMACEAE

35. *Cochlospermum religiosum* (L.) Alston

FLACOURTIACEAE

36. *Casearia ovata* (Lam.) Willd.,
37. *Flacourtia indica* (Burm. f.) Merr.
38. *Flacourtia ramontchi* L'Herit., Strip.
39. *Scolopia crenata* (Wight & Arn.) Clos,

PITTOSPORACEAE

40. *Pittosporum napaulense* (DC.) Rehder & Wilson,
41. *Pittosporum tetraspermum* Wight & Arn.,

POLYGALACEAE

42. *Polygala arillata* Buch.-Ham. ex D. Don,
43. *Polygala chinensis* L.,
44. *Polygala elongate* Klein ex Willd.,
45. *Polygala persicariifolia* DC.,
46. *Polygala rosmarinifolia* Wight & Arn.,
47. *Polygala sibirica* L.,

CARYOPHYLLACEAE

48. *Drymaria cordata* (L.) Roem. ex Schult.
49. *Polycarpaea corymbosa* (L.) Lam.,
50. *Polycarpon prostratum* (Forsk.) Asch. & Schweinf.

PORTULACEAE

51. *Portulaca oleracea* L.,
52. *Portulaca quadrifida* L.,
53. *Portulaca suffruticosa* Wight ex Wight & Arn.,
54. *Portucala tuberosa* Roxb.,
55. *Portulaca wightiana* Wall. ex Wight & Arn.,
56. *Talinum portulacifolium* (Forsk.) Asch. & Schweinf.

HYPERICACEAE

57. *Hypericum japonicum* thumb. ex Murr.
58. *Hypericum mysurense* Wight & Arn.,

CLUSIACEAE

59. *Calophyllum calaba* L.,
60. *Garcinia gummi-gutta* (L.) Robs.

61. *Mesua ferrea* L.,

TERNSTROEMACEAE

62. *Eurya nitida* Korth.

63. *Gordonia obtuse* Wall. ex Wight & Arn.,

DIPTEROCARPACEAE

64. *Hopea parviflora* Bedd.,

65. *Shorea roxburghii* G. Don,

MALVACEAE

66. *Abutilon hirtum* (Lam.) Sweet,

67. *Abutilon indicum* (L.) Sweet,

68. *Abutilon neilgherrense* Munro ex Wight,

69. *Fioria vitifolia* (L.) Mattei,

70. *Herissantia crispa* (L.) Briz.,

71. *Hibiscus canascens* Heyne ex Wight & Arn.,

72. *Hibiscus hispidissimus* Griff.,

73. *Hibiscus lobatus* (Murr.) O. Ktze.

74. *Hibiscus lunariifolius* Willd.,

75. *Hibiscus micranthus* L. f.,

76. *Pavonia odorata* Willd.,

77. *Pavonia burchellii* (DC.) Diernin

78. *Pavonia zeylanica* (L.) Cav.

79. *Sida acuta* Burm. f.,

80. *Sida cordifolia* L.,

81. *Sida mysorensis* Wight & Arn.,

82. *Sida rhombifolia* L.,

83. *Sida rhomboidea* Roxb. ex Fleming,

84. *Urena lobata* L., Sp. Pl. 692. 1753

BOMBACACEAE

85. *Bombax ceiba* L.,

86. *Cullenia exarillata* Robyns,

STERCULIACEAE

87. *Byttneria herbacea* Roxb.,

88. *Eriolaena hookeriana* Wight & Arn.,

89. *Helicteres isora* L

90. *Melhania incana* Heyne ex Wight & Arn.,

91. *Melochia corchorifolia* L.,

92. *Sterculia foetida* L.,

93. *Sterculia guttata* Roxb. ex Dc., P

94. *Sterculia urens* Roxb.,

95. *Waltheria indica* L.,

TELIACEAE

96. *Corchorus aestuans* L.,
97. *Corchorus tridens* L.,
98. *Grewia abutilifolia* Juss.
99. *Grewia damine* Gaertn
100. *Grewia flavescens* Juss.
101. *Grewia hirsuta* Vahl,
102. *Grewia obtusa* Wall. ex Dunn
103. *Grewia oppositifolia* Buch.- Ham. ex Roxb.
104. *Grewia orbiculata* Rottl.
105. *Grewia tiliifolia* Vahl,
106. *Grewia villosa* Willd
107. *Triumfetta pilosa* Roth,

ELEOARPACEAE

108. *Elaeocarpus glandulosus* Wall. ex Merr.,
109. *Elaeocarpus recurvatus* Corner. 1939
110. *Elaeocarpus tuberculatus* Roxb.,

LINACEAE

111. *Linum musorense* Heyne ex Benth.

ERYTHROXYLACEAE

112. *Erythroxylum monogynum* Roxb.,
113. *Hiptage benghalensis* (L.) Kurz,

ZYGOPHYLLACEAE

114. *Tribulus terrestris* L.,

OXALIDACEAE

115. *Biophytum candolleanum* Wight,
116. *Biophytum intermedium* Wight,
117. *Oxalis corniculata* L.,

BALSAMINACEAE

118. *Impatiens fruticosa* Lesch. ex DC.,
119. *Impatiens goughii* Wight,
120. *Impatiens hensloviana* Arn.,
121. *Impatiens maculata* Wight,
122. *Impatiens parasitica* Bedd.,
123. *Impatiens tangachee* Bedd.
124. *Impatiens tomentosa* Heyne ex Wight & Arn.,
125. *Impatiens trichocarpa* Hook.f.
126. *Impatiens verticillata* Wight,

RUTACEAE

127. *Acronychia pedunculata* (L.) Miq.,

128. *Atalantia monophylla* (Roxb.) DC.,
129. *Atalantia racemosa* Wight & Arn.,
130. *Chloroxylon swietenia* Dc.,
131. *Citrus limon* (L.) Burm. f.
132. *Clausena dentata* (Willd.) M. Roem.
133. *Clausena indica* (Dalz.) Oliver
134. *Glycosmis mauritiana* (Lam.) Tanaka
135. *Murraya paniculata* (L.) Jack.
136. *Pleiospermium alatum* (Wall. ex Wight & Arn.) Swingle
137. *Toddalia asiatica* (L.) Lam. var. *gracilis* Gamble

SIMAROUBACEAE

138. *Ailanthus excelsa* Roxb.,

OCHNACEAE

139. *Ochna obtusa* DC.

BURSERACEAE

140. *Boswellia serrata* Roxb. ex Coleb.
141. *Canarium strictum* Roxb.,
142. *Commiphora berryi* (Arn.) Engl.
143. *Commiphora caudata* (Wight & Arn.) Engl.
144. *Commiphora pubescens* (Wight & Arn.) Engl.
145. *Garuga floribunda* Decne.,

MELIACEAE

146. *Aglaiia elaeagnoidea* (Juss.) Benth.,
147. *Aphanamixis polystachya* (Wall.) Parker
148. *Azadirachta indica* A. Juss.
149. *Chukrasia tabularis* A. Juss.
150. *Cipadessa baccifera* (Roth) Miq.
151. *Melia dubia* Cav.,
152. *Trichilia connaroides* (Wight & Arn.) Benth.
153. *Walsura trifolia* (A. Juss.) Harms

OPELIACEAE

154. *Cansjera rheedii* Gmel.,
155. *Opilia amentacea* Roxb.,

AQUIFOLIACEAE

156. *Gomphandra coriacea* Wight,
157. *Ilex malabarica* Bedd.,

CELASTRACEAE

158. *Cassine glauca* (Rottb.) O. Ktze.,
159. *Cassine paniculata* (Wight & Arn.) Loobr.-Callen
160. *Celastrus paniculatus* Willd.,

161. *Euonymus dichotomous* Heyne ex Roxb.,
162. *Maytenus ovatus* (Wall.ex Wight & Arn.) Loes.
163. *Microtropis ramiflora* Wight, Ic. t.
164. *Loeseneriella arnottiana* (Wight) A. C. Smith,
165. *Loeseneriella obtusifolia* (Roxb.) A.C. Smith,
166. *Reissantia indica* (Willd.) Halle

RHAMNACEAE

167. *Ventilago madraspatana* Gaertn.,
168. *Ziziphus mauritiana* Lam.,
169. *Ziziphus oenoplia* (L.) Mill.,
170. *Ziziphus rugosa* Lam.,
171. *Ziziphus xylopyrus* (Retz.) Willd.,

VITACEAE

172. *Ampelocissus tomentosa* (Heyne ex Roth) Planch.
173. *Cayratia pedata* (Lam.) Juss. ex Gagnep. var. *glabra* Gamble,
174. *Cissus pallida* (Wight & Arn.) Planch.
175. *Cissus quadrangularis* L.,
176. *Cissus repens* Lam.,
177. *Cissus vitiginea* L.,
178. *Tetrastigma leucostaphylum* (Dennst.) Alston
179. *Tetrastigma sulcatum* (Laws.) Gamble,

SAPINDACEAE

180. *Allophylus cobbe* (L.) Raeusch,
181. *Allophylus concanicus* Radlk.
182. *Allophylus serratus* (Roxb.) Kurz
183. *Cardiospermum canescens* Wall.,
184. *Cardiospermum halicacabum* L
185. *Dimocarpus longan* Lour.,
186. *Dodonaea angustifolia* L. f
187. *Lepisanthes senegalensis* (Juss. ex Poir.) Leenh.
188. *Lepisanthes tetraphylla* (Vahl) Radlk.,
189. *Sapindus emarginata* Vahl,
190. *Schleichera oleosa* (Lour.) Oken,

SABIACEAE

191. *Meliosma pinnata* (Roxb.) Maxim. ssp. *arnottiana* (Wight) Beus.,
192. *Meliosma simplicifolia* (Roxb.) Walp. ssp. *pungens* (Wall.ex Wight & Arn.) Beus.

ANACARDIACEAE

193. *Buchanania lanzan* Spreng.
194. *Lannea coromandelica* (Houtt.) Merr.,
195. *Mangifera indica* L.,
196. *Nothopegia beddomei* Gamble,
197. *Rhus mysorensis* G. Don

MORINGACEAE

198. *Moringa pterygosperma* Gaertn.,

FABACEAE

199. *Abrus precatorius* L.,
200. *Alysicarpus bupleurifolius* (L.) DC., , var. *bupleurifolius*
201. *Alysicarpus monilifer* (L.) DC.,
202. *Alysicarpus rugosus* (Willd.) DC.,
203. *Atylosia albicans* (Wight & Arn.) Benth.
204. *Atylosia trinervia* (DC.) Gamble var. *major* (Wight & Arn.)
205. *Butea monosperma* (Lam.) Taub.
206. *Canavalia mollis* Wight & Arn.,
207. *Crotolaria candicans* Wight & Arn.,
208. *Crotolaria evolvuloides* Wight ex Wight & Arn.,
209. *Crotolaria ferruginea* Grah. ex Benth
210. *Crotolaria juncea* L.,
211. *Crotolaria lanata* Bedd.
212. *Crotolaria medicaginea* Lam.,
213. *Crotolaria pallida* Dryand.
214. *Crotolaria pusilla* Heyne ex Roth,
215. *Crotolaria retusa* L.,
216. *Crotolaria scabrella* Wight & Arn.,
217. *Crotolaria subperfoliata* Wight ex Wight & Arn.,
218. *Crotolaria umbellata* Wight ex Wight & Arn.,
219. *Crotolaria verrucosa* L.,
220. *Dalbergia congesta* Graham ex Wight & Arn.,
221. *Dalbergia lanceolaria* L. f.,
222. *Dalbergia latifolia* Roxb.,
223. *Dalbergia sissooides* Grah. ex Wight & Arn.,
224. *Derris brevipes* (Benth.) Baker
225. *Derris scandens* (Roxb.) Benth.,
226. *Desmodium heterocarpon* (L.) DC.,
227. *Desmodium pryonii* DC.,
228. *Desmodium pulchellum* (L.) Benth.,
229. *Desmodium rufescens* DC.,
230. *Desmodium triflorum* (L.) DC.,
231. *Desmodium velutinum* (Willd.) DC.,
232. *Dolichos trilobus* L.,
233. *Dunbaria ferruginea* Wight & Arn.,
234. *Erythrina suberosa* Roxb.,
235. *Erythrina variegata* L. var. *orientalis* Merr.
236. *Flemingia wightiana* Graham ex Wight & Arn.,
237. *Galactia villosa* Wight & Arn.,
238. *Goniogyna hirta* (Willd.) Ali.
239. *Indigofera colutea* (Burm. f.) Merr.
240. *Indigofera glandulosa* Roxb. ex Willd.

241. *Indigofera hirsuta* L.,
242. *Indigofera linnaei* Ali,
243. *Indigofera marginulata* Graham ex Wight & Arn.,
244. *Indigofera pulchella* Graham ex Wight & Arn.,
245. *Mucuna atropurpurea* DC.,
246. *Mundulea sericea* (Willd.) A. Cheval.
247. *Neonotonia wightii* (Grah. ex Wight & Arn.) Lackey 1977
248. *Pongamia pinnata* (L.) Pierre,
249. *Pseudarthria viscida* (L.) Wight & Arn.,
250. *Pterocarpus marsupium* Roxb.,
251. *Rhynchosia cana* DC.,
252. *Rhynchosia densiflora* (Roth) DC.,
253. *Rhynchosia rufescens* (Willd.) DC.,
254. *Rhynchosia viscosa* (Roth) DC.,
255. *Rothia indica* (L.) Druce
256. *Sesbania grandiflora* (L.) Poir.
257. *Smithia racemosa* Heyne ex Wight Arn.,
258. *Tephrosia maxima* Pers.,
259. *Tephrosia pulcherrima* (Wight ex Baker) Drumm.
260. *Tephrosia pumila* (Lam.) Pers.,
261. *Tephrosia vogelii* Hook.,
262. *Tephrosia villosa* (L.) Pers.,
263. *Uraria rufescens* (DC.) Schind.,
264. *Vigna grahamiana* (Wight & Arn.) Verdc.
265. *Vigna trilobata* (L.) Verdc., Taxon 17: 172. 1968
266. *Vigna vexillata* (L.) A. Rich. var. *wightii* (Benth. ex Bedd.) Babu & Sharma,
267. *Zornia gibbosa* Span.

CAESAPINIACEAE

268. *Acrocarpus fraxinifolius* Wight & Arn.
269. *Bauhinia racemosa* Lam.,
270. *Caesalpinia cucullata* Roxb.,
271. *Caesalpinia mimosoides* Lam.,
272. *Cassia absus* L.,
273. *Cassia auriculata* L.,
274. *Cassia fistula* L.,
275. *Cassia hirsuta* L.,
276. *Cassia kleinii* Wight & Arn.,
277. *Cassia mimosoides* L.,
278. *Cassia occidentalis* L.,
279. *Cassia timorensis* DC.,
280. *Delonix regia* (Boj. ex Hook.) Rafin.,
281. *Hardwickia binata* Roxb.,
282. *Parkinsonia aculeata* L., Sp.
283. *Pterolobium hexapetalum* (Roth) Sant. & Wagh
284. *Tamarindus indica* L.,

MIMOSACEAE

285. *Acacia caesia* (L.) Willd.
286. *Acacia catechu* (L.f.) Willd.,
287. *Acacia chundra* (Roxb. ex Rottl.) Willd.,
288. *Acacia ferruginea* DC.,
289. *Acacia leucophloea* (Roxb.) Willd.,
290. *Acacia mearnsii* Wilde,
291. *Acacia nilotica* (L.) Willd. ex Del. ssp. *indica* (Benth.) Brenan
292. *Acacia pennata* (L.) Willd.,
293. *Acacia planifrons* Wight & Arn.,
294. *Acacia torta* (Roxb.) Crib
295. *Albizia amara* (Roxb.) Boivin.
296. *Albizia lathamii* Hole
297. *Albizia lebbeck* (L.) Willd.,
298. *Albizia odoratissima* (L.f.) Benth.
299. *Dichrostachys cinera* (L.) Wight & Arn.,
300. *Entada rheedii* Spreng.
301. *Pithecellobium dulce* (Roxb.) Benth.
302. *Prosopis juliflora* (Sw.) DC.,

ROSACEAE

303. *Photinia notoniana* Wight & Arn.
304. *Prunus ceylanica* (Wight) Miq.
305. *Rubus ellipticus* Smith
306. *Rubus niveus* Thunb., Diss.

BRYOPHYLLACEAE

307. *Kalanchoe schweinfurthii* Penzig
308. *Kalanchoe olivacea* Dalz. & Gibs.,

DROSERACEAE

309. *Drosera burmannii* Vahl,
310. *Drosera peltata* Sm. in Willd.,

COMBRETACEAE

311. *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guill. & Perr.,
312. *Combretum albidum* G. Don
313. *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.,
314. *Terminalia chebula* Retz.,

MYRTACEAE

315. *Eucalyptus grandis* Hill ex Maiden,
316. *Rhodomyrtus tomentosus* (Ait.) Hassk.
317. *Syzygium cumini* (L.) Skeels
318. *Syzygium densiflorum* Wall. ex Wight & Arn.,
319. *Syzygium hemisphericum* (Wight) Alston
320. *Syzygium lanceolatum* (Lam.) Wight & Arn.,

321. *Syzygium tamilnadensis* Rathakr. & Chithra

MELASTOMATACEAE

322. *Medinilla malabarica* Bedd.,

323. *Memecylon grande* Retz.,

324. *Memecylon molestum* (Clarke) Cogn.

325. *Memecylon umbellatum* Burm. f

326. *Osbeckia aspera* (L.) Blume var. *wightiana* (Benth. ex Wight & Arn.) Trim.,

327. *Osbeckia leschenaultiana* DC.,

328. *Osbeckia virgata* D. Don ex Wight & Arn.,

329. *Osbeckia zeylanica* L. f.,

LYTHRACEAE

330. *Ammannia baccifera* L.,

331. *Ammannia multiflora* Roxb.,

332. *Nesaea brevipes* Koehne

333. *Rotala illecebroides* (Arn. ex Clarke) Koehne

ONAGRACEAE

334. *Ludwigia octovalvis* (Jacq.) Raven subsp. *sessiliflora* (Mich.) Raven

PASSIFLORACEAE

335. *Adenia wightiana* (Wall. ex Wight & Arn.) Engl.

336. *Passiflora foetida* L.,

337. *Passiflora leschenaultii* DC.,

CUCURBITACEAE

338. *Coccinia grandis* (L.) Voigt,

339. *Corallocarpus epigaeus* (Rottl. & Willd.) Clarke

340. *Ctenolepis garcinii* (Burm.f.) Clarke

341. *Diplocyclos palmatus* (L.) Jeffrey

342. *Mukia leiosperma* (Wight & Arn.) Wight

343. *Mukia maderaspatana* (L.) Roem.,

344. *Solena amplexicaulis* (Lam.) Gandhi

345. *Trichosanthes anaimalaiensis* Bedd.

346. *Trichosanthes tricuspida* Lour.,

BEGONIACEAE

347. *Begonia malabarica* Lam.,

CACTACEAE

348. *Opuntia stricta* (Haw.) Haw.,

349. *Opuntia vulgaris* Mill.,

AIZOACEAE

350. *Gisekia pharnaceoides* L.,

351. *Glinus oppositifolius* (L.) A. DC.

352. *Mollugo nudicaulis* Lam.,
 353. *Mollugo pentaphylla* L.,
 354. *Trianthema decandra* L.,

APIACEAE

355. *Centella asiatica* (L.) Urban
 356. *Heracleum candolleanum* (Wight & Arn.) Gamble,
 357. *Pimpinella candolleana* Wight & Arn.,

ARALIACEAE

358. *Schefflera racemosa* (Wight) Harms
 359. *Schefflera stellata* (Gaertn.) Harms

CORNACEAE

360. *Mastixia arborea* (Wight) Bedd.,

CAPRIFOLIACEAE

361. *Lonicera leschenaultii* Wall.
 362. *Viburnum punctatum* Buch.-Ham. ex D. Don,

RUBIACEAE

363. *Benkara malabarica* (Lam.) Tirvengadam
 364. *Canthium coromandelicum* (Burm. f.) Alston
 365. *Canthium dicoccum* (Gaertn.) Teijsm. & Binn.
 366. *Canthium dicoccum* (Gaertn.) Teijsm. & Binn. var. *umbellatum* (Wight) Sant. & Merch.
 367. *Catunaregam torulosa* (Dennst.) Tirv.;
 368. *Chassalia curviflora* (Wall. ex Kurz.) Thw. var. *ophioxylodes* (Wall.) Deb & Krishna
 369. *Galium asperifolium* Wall.
 370. *Gardenia gummifera* L. f.,
 371. *Gardenia resinifera* Roth,
 372. *Hedyotis aspera* Heyne ex Roth,
 373. *Hedyotis corymbosa* (L.) Lam.
 374. *Hedyotis diffusa* Willd.,
 375. *Hedyotis umbellata* (L.) Lam.,
 376. *Hedyotis wightii* (Hook. f.). K.K.N. Nair
 377. *Hymenodictyon orixense* (Roxb.) Mabber.
 378. *Ixora notoniana* Wall. ex G. Don,
 379. *Ixora pavetta* Andr.,
 380. *Knoxia mollis* R. Br. ex Wight & Arn.,
 381. *Knoxia sumatrensis* (Retz.) DC. var. *linearis*(Gamble) Bhattacharee & Deb
 382. *Knoxia sumatrensis* (Retz.) DC
 383. *Mitragyna parvifolia* (Roxb.) Korth.
 384. *Morinda coreia* Buch.-Ham.,
 385. *Morinda umbellata* L.,
 386. *Mussaenda tomentosa* Wight ex Wall. i
 387. *Neanotis indica* (DC.) W. H. Lewis 1966

388. *Ophiorrhiza eriantha* Wight,
389. *Pavetta laeta* Bremek.
390. *Psilanthus wightianus* (Wight & Arn.) J. Leroy,
391. *Psychotria elongata* (Wight) Hook. f.,
392. *Psychotria nigra* (Gaertn.) Alston var. *peninsularis* (Hook.f.) Deb & Gang.,
393. *Psychotria subintegra* (Wight & Arn.) Hook. f.,
394. *Richardia scabra* L.,
395. *Rubia cordifolia* L.,
396. *Saprosma foetens* (Wight) K. Schum.
397. *Spermacoce articularis* L. f.,
398. *Spermacoce latifolia* Aublet,
399. *Spermacoce mauritiana* Osea Giden ex Verdec.
400. *Tarenna asiatica* (L.) O. Ktze. ex K. Schum.
401. *Wendlandia thyrsoides* (Schultes) Steud.

ASTERACEAE

402. *Acanthospermum hispidum* DC.,
403. *Adenostemma lavenia* (L.) O. Ktze.,
404. *Ageratina adenophora* (Spreng.) King & Robins.,
405. *Ageratum conyzoides* L.,
406. *Ageratum houstonianum* Mill.,
407. *Anaphalis lawii* (Hook. f.) Gamble,
408. *Anaphalis travancorica* W. W. Smith
409. *Bidens pilosa* L. var. *minor* (Blume) Sherff
410. *Blainvillea acmella* (L.) Philip.,
411. *Blumea lacera* (Burm. f.) DC.
412. *Chromolaena odorata* (L.) King & Robins.,
413. *Conyza bonatiensis* (L.) Cronq.
414. *Conyza stricta* Willd.,
415. *Crassocephalum crepidioides* (Benth.) S. Moore
416. *Eclipta prostrata* (L.) L.,
417. *Emilia scabra* DC.,
418. *Emilia sonchifolia* (L.) DC.
419. *Galinsoga parviflora* Cav.,
420. *Gnaphalium polycaulon* Pers.,
421. *Gnaphalium pulvinatum* Delile,
422. *Gynura travancorica* W.W. Smith
423. *Helichrysum buddleioides* DC.
424. *Laggera crispata* (Vahl) Hepper & Wood
425. *Launaea acaulis* (Roxb.) Babc. ex Kerr.
426. *Mikania cordata* (Burm. f.) Robinson,
427. *Moonia heterophylla* Arn.
428. *Notonia grandiflora* Wall. ex DC
429. *Parthenium hysterophorus* L.,
430. *Phyllocephalum courtallense* (Wight) Narayana,
431. *Senecio scandens* Buch.-Ham. ex D. Don,
432. *Sigesbeckia orientalis* L.,

- 433. *Sonchus oleraceus* L.,
- 434. *Sonchus wightianus* DC.,
- 435. *Sphaeranthus amaranthoides* Burm. f.,
- 436. *Spilanthes paniculata* DC.,
- 437. *Synedrella nodiflora* (L.) Gaertn.,
- 438. *Tithonia diversifolia* (Hemsl.) A. Gray
- 439. *Tridax procumbans* L.,
- 440. *Vernonia albicans* DC
- 441. *Vernonia anthelmintica* (L.) Willd.,
- 442. *Vernonia bourneana* W.W. Smith
- 443. *Vernonia cinerea* (L.) Less.
- 444. *Vernonia conyzoides* DC.
- 445. *Vernonia divergens* (Roxb.) Edgew.
- 446. *Vicoa indica* (L.) DC.
- 447. *Xanthium indicum* Koen.
- 448. *Youngia japonica* (L.) DC.,

CAMPANULACEAE

- 449. *Wahlenbergia erecta* (Roth ex Schult.) Tuyn
- 450. *Wahlenbergia marginata* (Thunb.) A. DC.,
- 451. *Lobelia nicotianifolia* Roth ex Schultes in Roem. & Schultes,

VACCINIACEAE

- 452. *Vaccinium neilgherrense* Wight,

ERICACEAE

- 453. *Gaultheria fragrantissima* Wall.

PLUMBAGINACEAE

- 454. *Plumbago zeylanica* L.,

MYRSINACEAE

- 455. *Ardisia pauciflora* Heyne ex Roxb., F
- 456. *Embelia basaal* (Roem. & Schultes) A. DC.
- 457. *Embelia ribes* Burm. f.,
- 458. *Maesa indica* (Roxb.) DC.

SAPOTACEAE

- 459. *Madhuka indica* J. Gmelin,
- 460. *Manilkara hexandra* (Roxb.) Dubard
- 461. *Manilkara roxburghiana* (Wight) Dubard
- 462. *Mimusops elengi* L.,

EBENACEAE

- 463. *Diospyros cordifolia* Roxb.,
- 464. *Diospyros ebenum* Koen.
- 465. *Diospyros melanoxylon* Roxb.,

466. *Diospyros ovalifolia* Wight,
467. *Maba neilgherrensis* Wight,

SYMPLOCACEAE

468. *Symplocos cochinchinensis* (Lour.) Moore ssp. *laurina* Nooteb., Rev.

OLEACEAE

469. *Chionanthus mala-elengi* (Dennst.) P.S. Green
470. *Chionanthus ramiflorus* Roxb.,
471. *Jasminum auriculatum* Vahl,
472. *Jasminum azoricum* L.,
473. *Jasminum cuspidatum* Rottl.
474. *Jasminum rottlerianum* Wall. ex DC.,
475. *Jasminum trichotomum* Heyne ex Roth,
476. *Ligustrum perrottettii* DC.,
477. *Olea dioica* Roxb.,

APOCYNACEAE

478. *Azima tetraacantha* Lam.,
479. *Aganosma cymosa* (Roxb.) G. Don,
480. *Alstonia venenata* R. Br.
481. *Anodendron manubriatum* Merr.,
482. *Carissa carandas* L.,
483. *Cascabela thevetia* (L.) Lippold
484. *Catharanthus roseus* (L.) G. Don,
485. *Plumeria rubra* L.,
486. *Wrightia tinctoria* (Roxb.) R. Br.

ASCLEPIADACEAE

487. *Asclepias curassavica* L.,
488. *Calotropis gigantia* (L.) R. Br.
489. *Caramulla adscendens* (Roxb.) Haw. var. *attenuata* (Wight) Grav. & Mayuranathan
490. *Caramulla indica* (Wight & Arn.) N. E. Br.
491. *Caramulla umbellata* Haw.,
492. *Ceropegia candelabrum* L.,
493. *Ceropegia candelabrum* L. var. *biflora* (L.) Ansari
494. *Ceropegia decaisneana* Wight,
495. *Ceropegia elegans* Wall.
496. *Ceropegia juncea* Roxb.,
497. *Ceropegia omissa* Huber
498. *Cryptolepis buchananii* Roem. & Schult.,
499. *Cryptolepis grandiflora* Wight,
500. *Decalepis hamiltonii* Wight & Arn.
501. *Gymnema elegans* Wight & Arn.
502. *Gymnema sylvestre* (Retz.) R. Br. ex Schult.
503. *Hemidesmus indicus* (L.) R. Br. var. *pubescens* (Wight & Arn.) Hook. f.

504. *Leptadenia reticulata* (Retz.) Wight & Arn.
 505. *Marsdenia brunoniana* Wight & Arn.
 506. *Pergularia daemia* (Forssk.) Chiov.
 507. *Sarcostemma brunonianum* Wight & Arn.
 508. *Secamone emetica* (Retz.) R. Br. ex Schultes,
 509. *Tylophora capparidifolia* Wight & Arn.
 510. *Tylophora mollissima* Wight & Arn.,

511. *Utleria salicifolia*

512. *Wattakaka volubilis* (L. f.) Stapf

LOGANIACEAE

513. *Fagraea ceylanica* Thumb.,
 514. *Strychnos nux-vomica* L.,
 515. *Strychnos potatorum* L. f.,

BUDDLEJACEAE

516. *Buddleja asiatica* Lour.,

GENTIANACEAE

517. *Canscora perfoliata* Lam.
 518. *Exacum anamallayanum* Bedd.,
 519. *Exacum wightianum* Arn.
 520. *Hoppea fastigiata* (Griseb.) Clarke

HYDROPHYLLACEAE

521. *Hydrolea zeylanica* (L.) Vahl,

BORAGINACEAE

522. *Carmona retusa* (Vahl.) Masamune
 523. *Cordia gharaf* (Forssk.) Ehrenb. ex Asch.
 524. *Cordia monoica* Roxb.,
 525. *Cordia obliqua* Willd.,
 526. *Cynoglossum zeylanicum* (Honem.) Thunb. ex Lehm.,
 527. *Ehretia ovalifolia* Wight,
 528. *Ehretia pubescens* Benth.
 529. *Ehretia wightiana* Wall. ex G. Don,
 530. *Heliotropium marifolium* Retz.,
 531. *Trichodesma indicum* (L.) R. Br.,
 532. *Trichodesma zeylanicum* (Burm. f.) R. Br.

CONVOLVULACEAE

533. *Argyreia cuneata* (Willd.) Ker-Gawl.
 534. *Argyreia kondaparthiensis* Daniel & Vajravelu
 535. *Argyreia sericea* Dalz.
 536. *Cuscuta chinensis* Lam.,
 537. *Cuscuta reflexa* Roxb.,
 538. *Evolvulus alsinoides* (L.) L.,
 539. *Hewittia malabarica* (L.) Suresh

- 540. Ipomea cairica(L.) sweet,
- 541. Ipomea dichroa Choisy
- 542. Ipomea eriocarpa R. Br.,
- 543. Ipomea hederifolia L.,
- 544. Ipomea mombassana Vatke,
- 545. Ipomea nil (L.) Roth,
- 546. Ipomea odscura (L.) Ker-Gawl.,
- 547. Ipomea pes-tigridis L.,
- 548. Merremia tridentata (L.) Hall. f., ssp. *hastata*
- 549. Merremia tridentata (L.) Hall. f., subsp. *tridentata*
- 550. Rivea ornata (Roxb.) Choisy.,

551. SOLANACEAE

- 552. Datura metal L.,
- 553. Nicandra physalodes (L.) Gaertn.,.
- 554. Physalis minima L.,
- 555. Physalis peruviana L.,
- 556. Solanum anguivi Lam.,
- 557. Solanum denticulatum Blume,
- 558. Solanum erianthum D.
- 559. Solanum nigrum L.,
- 560. Solanum pubescens Willd.,
- 561. Solanum seafortianum Andr.,
- 562. Solanum torvum Sw.,

SCROPHULARIACEAE

- 563. Bacopa monnieri (L.) Pennell
- 564. Limnophila chinensis (Osbeck) Merr.
- 565. Limnophila indica (L.) Druce,
- 566. Kickxia ramosissima (Wall.) Janchen
- 567. Lindernia antipoda (L.) Alston
- 568. Lindernia caespitosa (Blume) Panigrahi
- 569. Lindernia crustacea (L.) F. Muell.,
- 570. Lindernia hyssopioides (Linn.) Haines,
- 571. Lindernia parviflora (Roxb.) Haines,
- 572. Lindernia rotundifolia (L.) Mukerjee,
- 573. Mazuz pumilus (Burm.f.) Steenis,
- 574. Micrargeria wightii Benth.
- 575. Scoparia dulcis L.,
- 576. Striga angustifolia (D.Don) Sald.,
- 577. Striga asiatica (L.) O. Ktez.,
- 578. Striga gesnerioides (Willd.) Vatke

LENTIBULARIACEAE

- 579. Utricularia rosea-purpurea Stapf ex Gamble,
- 580. *Utricularia scandens* Benj.

GESNERIACEAE

581. *Aeschynanthus perrottettii* A. DC.

582. *Didymocarpus tomentosa* Wight

BIGNONIACEAE

583. *Dolichandrone arcuata* (Wight) Clarke

584. *Radermachera xylocarpa* (Roxb.) K. Schum.

585. *Spathodea campanulata* Beauv.,

586. *Stereospermum colais* (Buch.-Ham. ex Dillw.) Mabber.,

ACANTHACEAE

587. *Andrographis affinis* Nees

588. *Andrographis neesiana* Wight,

589. *Asystasia chelonoides* Nees

590. *Asystasia gangetica* (L.) T. Andres.

591. *Barleria acuminata* Nees

592. *Barleria cristata* L.,

593. *Barleria involucrata* Nees var. *elata* (Dalz.) Clarke

594. *Barleria mysorensis* Heyne ex Roth,

595. *Barleria prionitis* L.,

596. *Blepharis maderaspatensis* (L.) Heyne ex Roth,

597. *Blepharis repens* (Vahl) Roth,

598. *Crossandra infundibuliformis* (L.) Nees

599. *Dicliptera cuneata* Nees in Wall.,

600. *Dipteracanthus patulus* (Jacq.) Nees

601. *Ecbolium viride* (Forssk.) Alston

602. *Eranthemum capense* L.,

603. *Justicia betonica* L.,

604. *Justicia glabra* Koen. ex Roxb.,

605. *Justicia latispica* (Clarke) Gamble,

606. *Justicia procumbans* L.,

607. *Jausticia santapau* Bennet

608. *Justicia tranquebariensis* L. f.,

609. *Lepidagathis scariosa* Nees

610. *Peristrophe paniculata* (Forssk.) Brummitt

611. *Pseuderanthemum malabaricum* (Clarke) Gamble,

612. *Rhinacanthus nasutus* (L.) Kurz

613. *Rungia apiculata* Bedd.,

614. *Strobilanthes cuspidatus* T. Andres.

VERBENACEAE

615. *Clerodendrum phlomidis* L. f.

616. *Clerodendron serratum* (L.) Moon,

617. *Clerodendron viscosum* Vent.,

618. *Gmelina arborea* Roxb.,

619. *Gmelina asiatica* L.,

620. *Lantana camara* L.,

621. *Lantana indica* Roxb.,

- 622. *Lippia javanica* (Burm.f.) Spreng.
- 623. *Premna latifolia* Roxb., Fl.
- 624. *Premna latifolia* Roxb. var *viburnoidea*
- 625. *Premna tomentosa* Willd.,
- 626. *Priva wightiana* Schauer
- 627. *Priva cordifolia* (L.f.) Druce
- 628. *Stachytarpheta jamaicensis* (L.) Vahl.
- 629. *Tectona grandis* L. f.,
- 630. *Vitex altissima* L. f.,
- 631. *Vitex leucoxydon* L.f. ,
- 632. *Vitex negundo* L.,

LAMIACEAE

- 633. *Anisochilus carnosus* (L.f.) Wall. ex Benth.
- 634. *Anisochilus wightii* Hook. f.,
- 635. *Anisomeles indica* (L.) O. Ktze.,
- 636. *Coleus amboinicus* Lour.
- 637. *Coleus barbatus* (Andr.) Benth.
- 638. *Coleus spicatus* Benth.
- 639. *Geniosporum elongatum* Benth.,
- 640. *Hyptis suaveolens* (L.) Poit.,
- 641. *Leonitis nepetiifolia* (L.) R. Br.,
- 642. *Leucas angularis* Benth.
- 643. *Leucas aspera* (Willd.) Link,
- 644. *Leucas biflora* (Vahl.) R. Br.,
- 645. *Leucas hirta* (Heyne ex Roth) Spreng.,
- 646. *Leucas indica* (L.) R. Br. ex Vatke
- 647. *Leucas martinicensis* (Jacq.) R. Br.,
- 648. *Leucas urticaefolia* (Vahl) R. Br.,
- 649. *Ocimum americanum* L.,
- 650. *Ocimum basilicum* L.,
- 651. *Ocimum gratissimum* L.,
- 652. *Orthosiphon thymiflorus* (Roth) Sleensen
- 653. *Plectranthus coleoides* Benth.
- 654. *Plectranthus japonicus* (Burm. f.) Koidz.
- 655. *Pogostemon auricularius* (L.) Hassk.
- 656. *Pogostemon benghalensis* (Burm.f.) O. Ktze.,
- 657. *Pogostemon pubescens* Benth.
- 658. *Scutellaria violacea* Heyne ex Benth.
- 659. *Teucrium tomentosum* Heyne ex Benth.

PLANTAGINACEAE

- 660. *Plantago erosa* wall.

NYCTAGINACEAE

- 661. *Boerhavia chinensis* (L.) Asch. & Schweinf., 1867
- 662. *Boerhavia diffusa* L.,

663. *Boerhavia erecta* L., yan
664. *Pisonia aculeata* L.,
665. *Mirabilis jalapa* L.

AMARANTHACEAE

666. *Achyranthes aspera* L.,
667. *Achyranthes bidentata* Blume,
668. *Aerva lanata* (L.) Juss. ex Schult.,
669. *Allmania nodiflora* (L.) R. Br. ex Wight 1834
670. *Alternanthera sessilis* (L.) R. Br. DC., C
671. *Amaranthus spinosus* L.,
672. *Celosia polygonoides* Retz.,
673. *Celosia pulcella* Moq.
674. *Cyathula prostrata* (L.) Blume,
675. *Digera muricata* (L.) Mart.,
676. *Gomphrena celosoides* C. Martius,
677. *Nothosaerva brachiata* (L.) Wight.
678. *Psilotrichum elliotii* Baker & Clarke
679. *Pupalia lappacea* (L.) Juss.
680. *Pupalia lappacea* (L.) Juss. var. *orbiculata* (Heyne ex Wall.) Townsend
681. *Amaranthus caudatus* L.

CHENOPODIACEAE

682. *Chenopodium ambrosioides* L.,

BASELLACEAE

683. *Basella alba* L.,

PHYTOLACCACEAE

684. *Phytolacca octandra* L.,

POLYGONACEAE

685. *Polygonum barbatum* L.,
686. *Polygonum chinense* L.,
687. *Polygonum glabrum* Willd.,
688. *Polygonum hydropiper* L.,

PODOSTEMONACEAE

689. *Polypleurum stylosum* (Wight) Hall
690. *Zeylanidium lichenoides* (Kurz) Engl.
691. *Zeylanidium olivaceum* (Gard.) Engl.

ARISTOLOCHIACEAE

692. *Aristolochia indica* L.,

PIPERACEAE

693. *Peperomia dindigulensis* Miq.,

694. *Peperomia tetraphylla* (Forst.) Hook. & Arn.,
695. *Piper hymenophyllum* Miq
696. *Piper mullesua* Bunch. –Ham. ex D. Don,
697. *Piper nigrum* L.,

LAURACEAE

698. *Actinodaphne bourdillonii* gamble
699. *Alseodaphne semecarpifolia* Nees var. *angustifolia* Meissner
700. *Beilschmiedia wightii* (Nees) Benth. ex Hook. f.,
701. *Cinnamomum verum* Presl.,
702. *Cinnamomum wightii* Meissner
703. *Cryptocarya neilgherrensis* Meissner
704. *Litsea deccanensis* Gamble,
705. *Litsea floribunda* (Blume) Gamble,
706. *Litsea wightiana* (Nees) Hook. f.
707. *Neolitsea cassia* (L.) Kostrem.
708. *Persea macrantha* (Nees) Kosterm.

HERNANDIACEAE

709. *Gyrocarpus asiaticus* Willd.,

THYMELIACEAE

710. *Gnidia glauca* (Fresen.) Gilg

ELAEAGNACEAE

711. *Elaeagnus kologa* Schlecht.

LORANTHACEAE

712. *Dendrophthoe falcata* (L.f.) Etting.
713. *Helixanthera intermedia* (Wight) Dnaser
714. *Macrosolen capitellatus* (Wight & Arn.) Danser
715. *Macrosolen parasiticus* (L.) Danser
716. *Scurrula parasitica* L.,
717. *Taxillus bracteatus* (Heyne ex Will.) Tieghem,
718. *Taxillus cuneatus* (Hyene ex Roth) Danser

VISCACEAE

719. *Viscum articulatum* Burm. f. var. *dichotomum* Kurtz,
720. *Viscum orientale* Willd.,

SANTALACEAE

721. *Osyris quadripartita* Salzm. ex Decne.
722. *Santalum album* L.,

BALANOPHORACEAE

723. *Balanophora fungosa* J. R. & G. Forst. subsp. *indica* (Arn.) Hansen

EUPHORBIACEAE

724. *Acalypha ciliata* Forssk.,
725. *Acalypha fruticosa* Forssk.,
726. *Acalypha indica* L.,
727. *Acalypha racemosa* Heyne ex Baille.,
728. *Agrostistachys indica* Dalz.
729. *Antidesma menasu* (Tul.) Miq. ex Muell.-Arg.
730. *Bischofia javanica* Blume,
731. *Breynia retusa* (Dennst.) Alston
732. *Breynia vitis-idaea* (Burm. f.) Fischer
733. *Bridelia crenulata* Roxb.,
734. *Drypteris roxburghii* (Wall.) Hurusawa
735. *Dryopteris sepiaria* (Wight & Arn.) Pax & Hoffm.
736. *Euphorbia antiquarum* L.,
737. *Euphorbia cristata* Heyne ex Roth,
738. *Euphorbia heterophylla* L.,
739. *Euphorbia hirta* L.,
740. *Euphorbia indica* Lam.,
741. *Euphorbia rosea* Retz.,
742. *Euphorbia thymifolia* L.,
743. *Euphorbia tirucalli* L.,
744. *Euphorbia tortilis* Rottl. ex Ainslie,
745. *Excoecaria robusta* Hook. f.,
746. *Givotia rottleriformis* Griff.
747. *Glochidion ellipticum* Wight,
748. *Glochidion zeylanichum* (Gaertn.) Juss. Euphorb.
749. *Homonoia riparia* Lour.,
750. *Jatropha curcas* L.,
751. *Jatropha glandulifera* Roxb.,
752. *Jatropha villosa* Wight
753. *Mallotus philippensis* (Lam.) Muell.- Arg.
754. *Mallotus stenanthus* Muell.- Arg.
755. *Mallotus tetracoccus* (Roxb.) Kurz.
756. *Phyllanthus amarus* Schum. & Thonn.,
757. *Phyllanthus emblica* L.,
758. *Phyllanthus maderaspatensis* L.,
759. *Phyllanthus reticulatus* Poir.
760. *Phyllanthus virgatus* Forst. f.,
761. *Ricinus communis* L.,
762. *Sebastiania chamaelea* (L.) Muell. -Arg.
763. *Securinega leucopyrus* (Willd.) Muell.- Arg
764. *Securinega virosa* (Roxb. ex Willd.) Baill.,

BUXACEAE

765. *Sarcococca saligna* (D.Don) Muell.- Arg.

URTICACEAE

- 766. *Debregeasia longifolia* (Burm. f.) Wedd.
- 767. *Elatostema lineolatum* Wight.
- 768. *Girardinia diversifolia* (Link) Friis
- 769. *Lecanthus peduncularis* (Wall. ex Royle) Wedd.
- 770. *Oreocnide integrifolia* (Gaudich.) Miq.
- 771. *Pouzolzia auriculata* Wight,
- 772. *Pouzolzia bennettiana* Wight var. *acuta* (Wight) Fischer
- 773. *Pouzolzia wightii* Benn. var. *nilghirensis* (Wight) Hook. f.,
- 774. *Pouzolzia wightii* var. *wallichiana* Hook.
- 775. *Procris crenata* Robinson

ULMACEAE

- 776. *Celtis philippensis* Blanco var. *wightii* (Planch.) Soep.
- 777. *Celtis tetrandra* Roxb.,
- 778. *Trema orientalis* (L.) Blume,

MORACEAE

- 779. *Antiaris toxicaria* Lesch.,
- 780. *Artocarpus hirsutus* Lam.,
- 781. *Dorstegia indica* Wall. ex Wight,
- 782. *Ficus amplissima* J.E. Smith
- 783. *Ficus amplocarpa* Govindarajalu & Masilamoney
- 784. *Ficus benghalensis* L.,
- 785. *Ficus dalhousiae* Miq.
- 786. *Ficus hispida* L.f.,
- 787. *Ficus microcarpa* L.f.,
- 788. *Ficus mollis* Vahl,
- 789. *Ficus racemosa* L.,
- 790. *Ficus talbotii* King
- 791. *Ficus tinctoria* Forst. f. subsp. *parasitica* (Willd.) Corner
- 792. *Ficus tsjahela* Burm. F
- 793. *Streblus asper* Lour.,

GNETACEAE

- 794. *Gnetum ula* Brogn.

ORCHIDACEAE

- 795. *Anoectochilus elatus* Lindl.,
- 796. *Brachycorythis iantha* (Wight) Summerh.,
- 797. *Cymbidium aloifolium* (L.) Sw.,
- 798. *Dendrobium nanum* Hook.f.
- 799. *Diplozentrum recurvum* Lindl.,
- 800. *Eria nana* A. Rich.,
- 801. *Eulophia epidendrea* (Koen.) Schltr.,
- 802. *Gastrochilus acaulis* (Lindl.) O. Ktze., Re
- 803. *Habenaria longicorniculata* Grah.,

804. *Habernaria longicornu* Lindl., Gen.
 805. *Habernaria rariflora* A. Rich.,
 806. *Habernaria roxburghii* Nicols.
 807. *Luisia birchea* (A. Rich.) Blume,
 808. *Oberonia verticillata* Wight,
 809. *Papilionanthe subulata* (Koen.) Garay.
 810. *Pecteilis gigantea* (J.E.Sm.) Rafin.,
 811. *Spiranthes sinensis* (Pers.) Ames,
 812. *Thrixspermum muscaeflorum* Rao & Jos. var. *nilagiricum* Jos.& Vajra.
 813. *Trichoglottis tenera* (Lindl.) Schltr.,
 814. *Vanda spathulata* (L.) Spreng.,
 815. *Vanda tessellata* (Roxb.) Hook. ex G. Don
 816. *Vanda testacea* (Lindl.) Reichb. f.
 817. *Zeuxine longilabris* (Lindl.) Benth. ex Hook. f.,

ZINGIBERACEAE

818. *Hedychium coronarium* Koenig

AMARYLLIDACEAE

819. *Pancratium triflorum* Roxb.,

HYPOXIDACEAE

820. *Ophiopogon intermedius* D. Don,
 821. *Peliosanthes teta* Andr. subsp. *humilis* (Andr.) Jessop,
 822. *Curculigo orchiodes* Gaertn.

DIOSCORIACEAE

823. *Dioscorea oppositifolia* L.,
 824. *Dioscorea pentaphylla* L.,
 825. *Dioscorea spicata* Roth,
 826. *Dioscorea tomentosa* Koen ex. Spreng.

LILIACEAE

827. *Aloe vera* (L.) Burm, f.,
 828. *Asparagus racemosus* Willd.,
 829. *Chorophytum attenuatum* (Wight) Baker
 830. *Gloriossa superba* L.,
 831. *Iphigenia indica* (L.) A. Gray ex Kunth,
 832. *Lilium wallichianum* Schultes & Schultes f.
 833. *Sansevieria roxburghiana* Schultes & Schultes f.,
 834. *Urginea indica* (Roxb.) Kunth,

SMILACACEAE

835. *Smilax aspera* L.,
 836. *Smilax perfoliata* Lour.,

PONTIDERIACEAE

837. *Monochoria vaginalis* (Burm.) Reliq.

XYRIDACEAE

838. *Xyris capensis* Thunb. var. *schoenoides* (Mart.) Nilsson

COMMELINACEAE

839. *Commenlina clavata* Clarke,

840. *Commelina ensifolia* R. Br.,

841. *Commelina maculata* Edgew., Trans.

842. *Cyanotis cristata* (L.) Don,

843. *Cyanotis fasciculata* (Heyne ex Roth) Schultes f.,

844. *Cyanotis papilionacea* (L.) Schultes f.,

845. *Cyanotis tuberosa* (Roxb.) Schultes f.

846. *Dictyospermum scaberrimum* (Blume) Morton ex Hara *et al.*,

847. *Murdannia dimorpha* (Dalz.) Brueck.

848. *Murdannia spirata* (L.) Brueck.

849. *Murdannia zeylanica* (Clarke) Brueckner var. *longiscapa* (Clarke) R. Rao. & Kammathy

850. *Tonningia axillaris* (L.) O. Ktze.,

JUNCACEAE

851. *Juncus prismatocarpus* R.Br.,

ARECACEAE

852. *Calamus gamblei* Beccari ex Beccari & Hook. f.,

853. *Phoenix loureirii* Kunth.

TYPHACEAE

854. *Typha angustata* Bory & Chaub.,

ARACEAE

855. *Amorphophallus bulubifer* (Roth.) Bl.,

856. *Arisaema leschenautii* Blume,

857. *Cryptocoryne consubrina* Schott

858. *Theriophonum sivaganganum* (Ramam. & Sebastine) Bogner

ERIOCAULACEAE

859. *Eriocaulon brownianum* Martius ex Wallich,

860. *Eriocaulon cinereum* R. Br.,

861. *Eriocaulon quinquangulare* L.,

CYPERACEAE

862. *Bulbostylis barbata* (Rottb.) Kunth ex Clarke

863. *Carex filicina* Nees

864. *Cyperus cuspidatus* Kunth

865. *Cyperus difformis* L., C

866. *Cyperus iria* L.,

867. *Cyperus pangorei* Rottb.,
 868. *Cyperus tenuispica* Sted.,
 869. *Fimbristylis argentea* (Rottb.) Vahl.,
 870. *Fimbristylis bisumbellata* (Forssk.) Bubani,
 871. *Fimbristylis cinnamomorum* (Vahl.) Kunth,
 872. *Fimbristylis complanata* (Retz.) Link.,
 873. *Fimbristylis tristachya* R. Br.,
 874. *Fimbristylis uliginosa* Hocst. ex Steud.,
 875. *Kyllinga brevifolia* Rottb.,
 876. *Kyllinga bulbosa* Beauv., Fl. d' Oware &
 877. *Kyllinga squamulata* Vahl.
 878. *Lipocarpha chinensis* (Osbeck)Kern.,
 879. *Mariscus compactus* (Retz.) Bold.
 880. *Mariscus cyperinus* (Retz.) Vahl,
 881. *Mariscus dubius* (Rottb.) Kukenth ex Fischer
 882. *Mariscus squarrossus* (L.) Clarke
 883. *Mariscus sumatrensis* (Retz.) Koyama.
 884. *Pycreus polystachyos* (Rottb.) Beauv.,
 885. *Pycreus pumilus* (L.) Nees,
 886. *Scleria terrestris* (L.) Fassett

POACEAE

887. *Alloteropsis cimicina* (L.) Staf
 888. *Apluda mutica* L.,
 889. *Aristida adscensionis* L.,
 890. *Arundinella ciliata* (Roxb.) ex Miq.
 891. *Arundinella mesophylla* Nees ex Steud.,
 892. *Arundinella setosa* Trin.,
 893. *Axonopus compressus* (Sw.) P. Beauv.,
 894. *Bambusa bambos* (L.) Voss.
 895. *Bothriochloa pertusa* (L.) A. Camus
 896. *Brachiaria distachya* (L.) Stapf. in Prain,
 897. *Brachiaria miliiformis* (J.S. Presl) A. Chase
 898. *Brachiaria ramosa* (L.) Stapf.
 899. *Brachiaria semiundulata* (Hochst.) Stapf
 900. *Brachiaria smiverticillata* (Rottl.) Alston
 901. *Capillipedium assimile* (Steud.) A. Camus
 902. *Chloris dolichostachya* Lagasca,
 903. *Chloris roxburghiana* Schultes,
 904. *Chrysopogon velutinus* (Hook.f.) Bor,
 905. *Chrysipogon zeylanicus* (Nees ex Steud.) Thw.,
 906. *Coelchne simpliciuscula* (Wight & Arn. ex Steud.) Benth.
 907. *Coix lacryma-jobi* L.,
 908. *Cymbopogon flexuosus* (Nees ex Steud.) Wats.
 909. *Cynodon barberi* Rang. & Tad.
 910. *Cyrtococcum deccanense* Bor
 911. *Cyrtococcum longiceps* (Wight & Arn. ex Hook.f.) A. Camus

912. *Cyrtococcum trigonum* (Retz.) A. Camus
913. *Dactyloctenium aegyptium* (L.) P. Beauv.,
914. *Dendrocalamus strictus* (Roxb.) Nees
915. *Digitaria bicornis* (Lam.) Roem. & Schult.,
916. *Digitaria wallichiana* (Wight & Arn. ex Steud.) Staf
917. *Echinochloa colona* (L.) Link.,
918. *Echinochloa stagnina* (Retz.) P. Beauv.,
919. *Enneapogon schimperanus* (Hochst. ex A. Rich.) Renvoize
920. *Enteropogon monostachyos* (Vahl.) Schum. ex Engl.
921. *Eragrostiella bifaria* (Vahl) Bor,
922. *Eragrostis atrovirens* (Desv.) Trin. ex Steud.,
923. *Eragrostis diplachnoides* Steud.,
924. *Eragrostis nigra* Nees ex Steud.,
925. *Eragrostis riparia* (Willd.) Nees,
926. *Eragrostis tenella* (L.) Beauv. ex Roem. & Schultes,
927. *Eragrostis tenuifolia* (A. Rich.) Hochst. ex Steud.,
928. *Eragrostis unioloides* (Retz.) Nees ex Steud.,
929. *Garnotia courtallensis* (Arn. & Nees) Thw.,
930. *Garnotia elata* (Arn. ex Miq.) Janowski,
931. *Hackelochloa granularis* (L.) O. Htez.,
932. *Heteropogon contortus* (L.) P. Beauv. ex Roem. & Schult.,
933. *Imperata cylindrica* (L.) Raeusch. var. *major* (Nees) C. E. Hubb. ex Hubb. & Vaughan,
934. *Isachne setosa* Fischer
935. *Isachne walkeri* (Arn. ex Steud.) Wight & Arn. ex Thw.,
936. *Ischaemum nilagiricum* Hack.
937. *Oplismenus undulatifolius* (Ard.) P. Beauv. ex Roem. & Schultes,
938. *Oropetium thomaeum* (L.f.) Trin.,
939. *Panicum trypheron* Schult.,
940. *Paspalidium flavidum* (Retz.) A. Camus.
941. *Paspalum scrobiculatum* L.,
942. *Perotis indica* (L.) O. Ktze.,
943. *Phragmites karka* (Retz.) Trin. ex Steud.,
944. *Pogonatherum crinitum* (Thunb.) Kunth,
945. *Pseudoxytenanthera monadelpha* (Thw.) Soderstrom & Ellis,
946. *Rhychelytrum repens* (Willd.) C.E. Hubb.
947. *Rottboellia cochinchinensis* (Lour.) W. D. Clayton
948. *Saccharum spontaneum* L.,
949. *Sacciolepis indica* (L.) A. Chase
950. *Sehima nervosum* (Rottl.) Staff
951. *Setaria palmifolia* (Koen.) Staff
952. *Setaria pumila* (Poir.) Roem. & Schult.,
953. *Setaria geniculata* (Lamk.) P. Beauv.,
954. *Sinarundinaria walkeriana* (Munro) Chao & Renv. 1989
955. *Sorghum halepense* (L.) Pers.
956. *Sorghum nitidum* (Vahl) Pers.,
957. *Sporobolus indicus* (L.) R. Br. var. *fertilis* (Steud.) Jovet & Guedes

958. *Sporobolus indicus* (L.) R. Br. var. *diander* (Restz.) Jovet & Guedes,
959. *Themeda cymbaria* (Roxb.) Hack.,
960. *Themeda triandra* Forssk.,
961. *Tragus roxburghii* Panigrahi
962. *Tripogon bromoides* Roem. Schult.,
963. *Zenkeria elegans* Trins.,

Mammals of Chinnar Wildlife Sanctuary

No.	Common name	Scientific name
1	Bonnet Macaque	<i>Macaca radiata</i> (Geoffroy)
2	Common Langur	<i>Presbytis entellus</i> (Dufresne)
3	Slender Loris	<i>Loris tardigradus</i> (Linnaeus)
4	Tiger	<i>Panthera tigris</i> (Linnaeus)
5	Leopard	<i>Panthera pardus</i> (Linnaeus)
6	Rusty Spotted Cat	<i>Felis rubiginosa</i> (Geoffroy)
7	Jungle Cat	<i>Felis chaus</i> (Guldenstaedt)
8	Common Palm Civet or Toddy Cat	<i>Paradoxurus hermapheoditus</i> (Pallas)
9	Common Mongoose	<i>Herpestes edwardsi</i> (Geoffroy)
10	Indian Wild Dog	<i>Cuon alpinus</i> (Pallas)
11	Sloth Bear	<i>Melursus ursinus</i> (Shaw)
12	Common Otter	<i>Lutra lutra</i> (Linnaeus)
13	Indian Giant Squirrel	<i>Ratufa indica</i> (Erxleben)
14	Grizzled Giant Squirrel	<i>Ratufa macroura</i> (Pennant)
15	Common Giant Flying Squirrel	<i>Petaurista petaurista</i> (Pallas)
16	Three Striped Palm Squirrel	<i>Funambulus palmarum</i> (Linnaeus)
17	Indian Porcupine	<i>Hystrix indica</i> (Kerr)
18	Blacknaped Hare	<i>Lepus nigricollis</i> (F.cuvier)
19	Indian Elephant	<i>Elephas maximus</i> (Linnaeus)
20	Gaur	<i>Bos Gaurus</i> (H.smith)
21	Nilgiri Tahr	<i>Hemitragus hylocrius</i> (Ogilby)
22	Sambar	<i>Cervus unicolor</i> (Kerr)
23	Spotted Deer	<i>Axis axis</i> (Erxleben)
24	Barking Deer	<i>Muntiacus muntjak</i> (Zimmermann)
25	Mouse Deer	<i>Tragulus memminna</i> (Erxleben)
26	Indian Pangolin	<i>Manis crassicaudata</i> (Gray)
27	Wild Boar	<i>Sus scrofa</i> (Linnaeus)
28	Nilgiri Langur	<i>Presbytis johnii</i> (Fischer)

Birds of Chinnar Wildlife Sanctuary

No.	Common Name	Scientific Name
1	Little Cormorant	<i>Phalacrocorax niger</i>
2	Little Green Heron	<i>Ardeola striatus</i>
3	Pond Heron	<i>Ardeola grayii</i>
4	Cattle Egret	<i>Bubulcus ibis</i>
5	Little Egret	<i>Egretta garzetta</i>
6	Black-winged Kite	<i>Elanus caeruleus</i>
7	Black Kite	<i>Milvus Migrans</i>
8	Brahminy Kite	<i>Haliastur indus</i>
9	Crested Honey Buzzard	<i>Pernis ptilorhynchus</i>
10	Shikra	<i>Accipiter badius</i>
11	Crested Goshawk	<i>Accipiter trivirgatus</i>
12	Besra Sparrowhawk	<i>Accipiter virgatus</i>
13	White-eyed Buzzard	<i>Butastur teesa</i>
14	Crested Hawk Eagle	<i>Spizaetus cirrhatus cirrhatus</i>
15	Rufous-bellied Hawk-Eagle	<i>Lophotriorchis kienerii</i>
16	Booted Eagle	<i>Hieraetus pennatus</i>
17	Black Eagle	<i>Ictinaetus malayensis</i>
18	Crested serpent eagle	<i>Spilornis cheela</i>
19	Indian kestrel	<i>Falco tinnunculus</i>
20	Painted bush quail	<i>Perdica erythrorhyncha</i>
21	Jungle bush quail	<i>Perdica asiatica</i>
22	Red Spurfowl	<i>Galloperdix spadicea</i>
23	Grey jungle fowl	<i>Gallus sonnerattii</i>
24	Common Peafowl	<i>Pavo cristatus</i>
25	Yellow-legged Buttonquail	<i>Turnix tanki</i>
26	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>
27	Red-wattled Lapwing	<i>Vanellus indicus</i>
28	Common Sandpiper	<i>Tringa hypoleucos</i>
29	Green Sandpiper	<i>Tringa ochropus</i>
30	Yellow-Legged Green Pigeon	<i>Treron phoenicopterus</i>
31	Grey-fronted Green-Pigeon	<i>Treron pompadora</i>
32	Green imperial pigeon	<i>Ducula aenea</i>
33	Jerdons imperial pigeon	<i>Ducula badia</i>
34	Blue Rock Pigeon	<i>Columba livia</i>
35	Nilgiri wood pigeon	<i>Columbia elphinstonii</i>

36	Indian Ring Dove	<i>Streptopelia decaocto</i>
37	Spotted dove	<i>Streptopelia chinensis</i>
38	Little Brown Dove	<i>Streptopelia senegalensis</i>
39	Emerald dove	<i>Chalcophaps indica</i>
40	Red Turtle Dove	<i>Streptopelia tranquebarica</i>
41	Rose-ringed Parakeet	<i>Psittacula krameri</i>
42	Blossom-headed Parakeet	<i>Psittacula cyanocephala</i>
43	Blue-winged Parakeet	<i>Psittacula columboides</i>
44	Indian Lorikeet	<i>Loriculus vernalis</i>
45	Pied Crested Cuckoo	<i>Clamator jacobinus</i>
46	Common Hawk-Cuckoo	<i>Cuculus varius</i>
47	Large Hawk-Cuckoo	<i>Cuculus sparverioides</i>
48	Indian Cuckoo	<i>Cuculus micropterus</i>
49	Banded Bay Cuckoo	<i>Cacomantis sonneratii</i>
50	Plaintive Cuckoo	<i>Cacomantis passerinus</i>
51	Drongo-Cuckoo	<i>Surniculus lugubris</i>
52	Indian Koel	<i>Eudynamys scolopacea</i>
53	Small Green Billed Malkoha	<i>Rhopodytes viridirostris</i>
54	Lesser Coucal	<i>Centropus toulou</i>
55	Sirkeer Cuckoo	<i>Taccocua leschenaultii</i>
56	Crow Pheasant	<i>Centropus sinensis</i>
57	Barn Owl	<i>Tyto alba</i>
58	Scops Owl	<i>Otus scops</i>
59	Collared Scops-owl	<i>Otus bakkamoena</i>
60	Brown Fish Owl	<i>Bubo zeylonensis</i>
61	Jungle Owlet	<i>Glaucidium radiatum</i>
62	Mottled Wood Owl	<i>Strix ocellata</i>
63	Brown Wood Owl	<i>Strix leptogrammica</i>
64	Jungle Nightjar	<i>Caprimulgus indicus</i>
65	Common Indian Nightjar	<i>Caprimulgus asiaticus</i>
66	Long-tailed Nightjar	<i>Caprimulgus macrurus</i>
67	Franklin's Nightjar	<i>Caprimulgus affinis</i>
68	Great Eared Nightjar	<i>Eurostopodus macrotis</i>
69	Black-nest Swiftlet	<i>Collocalia unicolor.</i>
70	Large Brown Throated Spine Tailed Swift	<i>Chaetura gigantea</i>
71	Alpine Swift	<i>Apus melba</i>
72	White-rumped Spine-tailed Swift	<i>Chaetura sylvatica</i>
73	House Swift	<i>Apus affinis</i>

74	Crested tree swift	<i>Hemiprocne longipennis</i>
75	Pied kingfisher	<i>Ceryle rudis</i>
76	Common Kingfisher	<i>Alcedo atthis</i>
77	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>
78	White-throated Kingfisher	<i>Halcyon smyrnensis</i>
79	Chestnut headed bee-eater	<i>Merops lescheneaultii</i>
80	Blue-tailed Bee-eater	<i>Merops philippinus</i>
81	Small green bee-eater	<i>Merops orientalis</i>
82	Blue-bearded Bee-eater	<i>Nyctyornis athertoni</i>
83	Indian Roller	<i>Coracias benghalensis</i>
84	Hoopoe	<i>Upupa epops</i>
85	Malabar Grey Hornbill	<i>Tockus Griseus</i>
86	Small Green Barbet	<i>Megalaima viridis</i>
87	Large Green Barbet	<i>Megalaima zeylanica</i>
88	Crimson-throated Barbet	<i>Megalaima rubricapillus</i>
89	Crimson-breasted Barbet	<i>Megalaima haemacephala</i>
90	Speckled Piculet	<i>Picumnus innominatus</i>
91	Little Scaly-bellied Green Woodpecker	<i>Picus mermecophoneus</i>
92	Rufous Woodpecker	<i>Micropternus brachyurus</i>
93	Small Yellow -Naped Woodpecker	<i>Picus chlorolophus</i>
94	Malabar Golden-backed Woodpecker	<i>Dinopium benghalense.</i>
95	Golden-backed Three-toed Woodpecker	<i>Dinopium javanense</i>
96	Large Golden-backed Woodpecker	<i>Chrysocolaptes lucidus</i>
97	Mahratta Woodpecker	<i>Picoides Mahrattensis</i>
98	Pygmy Woodpecker	<i>Dendrocopos nanus</i>
99	Black-backed Woodpecker	<i>chrysocolaptes lucidus</i>
100	Heart-spotted Woodpecker	<i>Hemicircus canente</i>
101	Indian Pitta	<i>Pitta brachyura</i>
102	Red-winged Bushlark	<i>Miraфра assamica</i>
103	Ashy-crowned Finch-lark	<i>Eremopterix griseus</i>
104	Short-toed Lark	<i>Calandrella cinerea</i>
105	Malabar Crested Lark	<i>Galerida malabarica</i>
106	Dusky Crag Martin	<i>Hirundo concolor</i>
107	Eastern Swallow	<i>Hirundo rustica</i>
108	Nilgiri house swallow	<i>Hirundo tahitiaca</i>
109	Wire-tailed Swallow	<i>Hirundo smithii</i>
110	Red-rumped Swallow	<i>Hirundo daurica</i>
111	Cliff Swallow	<i>Hirundo fluvicola</i>

112	Bay-backed Shrike	<i>Lanius vittatus</i>
113	Rufous-backed Shrike	<i>Lanius schach</i>
114	Brown Shrike	<i>Lanius cristatus</i>
115	Golden Oriole	<i>Oriolus oriolus</i>
116	Black-naped Oriole	<i>Oriolus chinensis</i>
117	Black-headed Oriole	<i>Oriolus xanthornus</i>
118	Black Drongo	<i>Dicrurus adsimilis</i>
119	Grey Drongo	<i>Dicrurus leucophaeus</i>
120	White-bellied Drongo	<i>Dicrurus caerulescens</i>
121	Bronzed Drongo	<i>Dicrurus aeneus</i>
122	Racket-tailed Drongo	<i>Dicrurus paradiseus</i>
123	Ashy Swallow-Shrike	<i>Artamus fuscus</i>
124	Grey-headed Myna	<i>Sturnia malabarica</i>
125	Brahminy Myna	<i>Sturnia pagodarum</i>
126	Rosy Pastor	<i>Sturnus roseus</i>
127	Common Myna	<i>Acridotheres tristis</i>
128	Jungle Myna	<i>Acridotheres fuscus</i>
129	Indian tree pie	<i>Dendrocitta vagabunda</i>
130	White-bellied Treepie	<i>Dendrocitta leucogastra</i>
131	House Crow	<i>Corvus splendens</i>
132	Jungle Crow	<i>Corvus macrorhynchos</i>
133	Pied Flycatcher-shrike	<i>Hemipus picatus</i>
134	Large Wood-shrike	<i>Tephrodornis virgatus</i>
135	Common Woodshrike	<i>Tephrodornis pondicerianus</i>
136	Large Cuckooshrike	<i>Coracina macei</i>
137	Black-headed Cuckooshrike	<i>Coracina melanoptera</i>
138	Scarlet Minivet,	<i>Pericrocotus flammeus</i>
139	Small Minivet	<i>Pericrocotus cinnamomeus</i>
140	Common Iora	<i>Aegithina tiphia</i>
141	Golden-fronted Chloropsis	<i>Chloropsis aurifrons</i>
142	Gold-mantled Chloropsis	<i>Chloropsis cochinchinensis</i>
143	Fairy-bluebird	<i>Irena puella</i>
144	Grey-headed Bulbul	<i>Pycnonotus priocephalus</i>
145	Ruby-throated Bulbul	<i>Pycnonotus melanicterus</i>
146	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>
147	Red-vented Bulbul	<i>Pycnonotus cafer</i>
148	Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>
149	White-browed Bulbul	<i>Pycnonotus luteolus</i>

150	Yellow-browed Bulbul	<i>Hypsipetes indicus</i>
151	Black Bulbul	<i>Hypsipetes madagascariensis</i>
152	Spotted Babbler	<i>Pellorneum ruficeps</i>
153	Scimitar-babbler	<i>Pomatorhinus schisticeps</i>
154	White-throated Babbler	<i>Dumetia hyperythra</i>
155	Black-Headed Babbler	<i>Rhopocichla atriceps</i>
156	Yellow-eyed Babbler	<i>Chrysomma sinense</i>
157	Rufous Babbler	<i>Turdoides subrufa</i>
158	Jungle Babbler	<i>Turdoides striata</i>
159	White-headed Babbler	<i>Turdoides affinis</i>
160	Wayanad Laughing Thrush	<i>Garrulax delesserti</i>
161	White-breasted Laughingthrush	<i>Garrulax jerdoni</i>
162	Quaker-Babbler	<i>Alcippe poiocephala</i>
163	Brown Flycatcher	<i>Muscicapa latirostris</i>
164	Brown-breasted Flycatcher	<i>Muscicapa muttui</i>
165	Rufous-tailed Flycatcher	<i>Muscicapa ruficauda</i>
166	Whitebellied Blue Flycatcher	<i>Muscicapa pallipes</i>
167	Blue throated Flycatcher	<i>Muscicapa rubeculoides</i>
168	Tickelli's Blue Flycatcher	<i>Muscicapa tickelliae</i>
169	Verditer Flycatcher	<i>Muscicapa thalassina</i>
170	Nilgiri Flycatcher	<i>Muscicapa albicaudata</i>
171	Grey-headed flycatcher	<i>Culicicapa ceylonensis</i>
172	White bowed Fantail Flycatcher	<i>Rhipidura aureola</i>
173	Paradise Flycatcher	<i>Terpsiphone paradisi</i>
174	Black napped Blue Flycatcher	<i>Hypothymis azurea</i>
175	Streaked Fantail Warbler	<i>Cisticola juncidis</i>
176	Franklin's Wren Warbler	<i>Prinia hodgsonii</i>
177	Plain Wren Warbler	<i>Prinia subflava</i>
178	Ashy Wren Warbler	<i>Prinia socialis</i>
179	Jungle Wren Warbler	<i>Prinia sylvattica</i>
180	Tailor Bird	<i>Orthotomus sutorius</i>
181	Great Reed Warbler	<i>Acrocephalus stentoreus</i>
182	Blyth's Reed Warbler	<i>Acrocephalus dumetorum</i>
183	Thick billed Warbler	<i>Acrocephalus aedon</i>
184	Booted tree Warbler	<i>Hippolais caligata</i>
185	Lesser Whitethroat	<i>Sylvia curruca</i>
186	Tickell's leaf Warbler	<i>Phylloscopus affinis</i>
187	Large crowned leaf Warbler	<i>Phylloscopus occipitalis</i>

188	Large billed leaf Warbler	<i>Phylloscopus magnirostris</i>
189	Greenish leaf Warbler	<i>Phylloscopus trochiloides</i>
190	White-bellied Shortwing	<i>Brachypteryx major</i>
191	Blue Chat	<i>Erithacus brunneus</i>
192	Magpie Robin	<i>Copsychus saularis</i>
193	Shama	<i>Copsychus malabaricus</i>
194	Pied Bushchat	<i>Saxicola caprata</i>
195	Indian Robin	<i>Saxicoloides fulicata</i>
196	Blue headed Rock Thrush	<i>Monticola cinclorhynchus</i>
197	Blue Rock Thrush	<i>Monticola solitarius</i>
198	Malabar Whistling Thrush	<i>Myiophonus horsfieldii</i>
199	White throated Ground Thrush	<i>Zoothera citrina cyanotus</i>
200	Black Bird	<i>Turdus merula</i>
201	Grey Tit	<i>Parus major</i>
202	Yellow cheeked Tit	<i>Parus xanthogenys</i>
203	Velvet fronted Nuthatch	<i>Sitta frontalis</i>
204	Paddy field pipit	<i>Anthus novaeseelandiae</i>
205	Nilgiri pipit	<i>Anthus nilghiriensis</i>
206	Forest Wagtail	<i>Motacilla indica</i>
207	Grey Wagtail	<i>Motacilla cinerea</i>
208	Large pied Wagtail	<i>Motacilla maderaspatensis</i>
209	Thick billed Flowerpecker	<i>Dicaeum agile</i>
210	Tickell's Flowerpecker	<i>Dicaeum erythrorhynchos</i>
211	Nilgiri Flowerpecker	<i>Dicaeum concolor</i>
212	Purple rumped Sunbird	<i>Nectarinia zeylonica</i>
213	Small Sunbird	<i>Nectarinia minima</i>
214	Loten's Sunbird	<i>Nectarinia lotenia</i>
215	Purple Sunbird	<i>Nectarinia asiatica</i>
216	Little Spider Hunter	<i>Arachnothera longirostra</i>
217	Nilgiri white eye	<i>Zosterops palpebrosa</i>
218	House Sparrow	<i>Passer domesticus</i>
219	Yellow throated Sparrow	<i>Petronia xanthocollis</i>
220	Red Munia	<i>Estrilda amandava</i>
221	White backed Munia	<i>Lonchura striata</i>
222	Rufousbellied Munia	<i>Lonchura kelaarti</i>
223	Spotted Munia	<i>Lonchura punctulata</i>
224	Blackheaded Munia	<i>Lonchura Malabarica</i>
225	Common Rose finch	<i>Carpodacus erythrurus</i>

Reptiles of Chinnar Wildlife Sanctuary

No.	Common Name	<i>Scientific Name</i>
Family: CROCODYLIDAE		
1	Marsh crocodile / Mugger	<i>Crocodylus palustris</i>
Family: TESTUDINIDAE		
2	Star Tortoise	<i>Geochelone elegans</i>
Family: EMYDIDAE		
3	Indian black turtle	<i>Melanochelys trijuga.</i>
Family: GEKKONIDAE		
4	Common House Gecko	<i>Hemidactylus frenatus</i>
5	Leschenault's Leaf-toed Gecko	<i>Hemidactylus leschenaultii</i>
6	Termite Hill Gecko	<i>Hemidactylus triedrus.</i>
7	Green Termite Gecko	<i>Hemidactylus subtriedrus</i>
8	Kandy Day Gecko, Kandy Rock Gecko	<i>Cnemaspis kandianus</i>
9	Slender day gecko	<i>Cnemaspis gracilis</i>
Family: SCINCIDAE		
10	Bronze grass skink	<i>Mabuya macularius.</i>
11	Common skink	<i>Mabuya carinata.</i>
12	Bibron's seashore skin	<i>Mabuya bibronii</i>
13	Dotted Garden Skink	<i>Riopa punctata</i>
14	Leschenault's Snake Eye	<i>Ophisops leschenaultii</i>
15	Rurk's Ristella	<i>Ristella rurkii</i>
Family: VARANIDAE		
16	Common monitor lizard	<i>Varanus bangalensis.</i>
Family: TYPHLOPIDAE		
17	Common blind snake	<i>Ramphotyphlops braminus.</i>
18	Kollegal Ground Gecko	<i>Geckoella kollegalensis</i>
19	Indian kestrel	<i>Falco tinnunculus</i>
Family: AGAMIDAE		
20	Indian garden lizard	<i>Calotes versicolor.</i>
21	Blanford's Rock Agama	<i>Psammophilus blanfordanus</i>
22	Peninsular Rock Agama	<i>Psammophilus dorsalis</i>
23	Western ghats flying lizard	<i>Draco dussumieri.</i>
Family: CHAMAELEONIDAE		
24	Indian chameleon	<i>Chamaeleo zeylanicus</i>
Family: COLUBRIDAE		

25		<i>Atretium sp</i>
26	Indian trinked snake	<i>Elaphe helena.</i>
27	Western rat snake	<i>Ptyas mucosus.</i>
28	Common bronze back tree snake	<i>Dendrelaphis tristis.</i>
29	Common wolf snake	<i>Lycodon aulicus.</i>
30	Checkered keel back water snake	<i>Xenochrophis piscator</i>
31	Ornate flying snake	<i>Chrysopelea ornata</i>
32	buff striped keelback	<i>Amphiesma stolatum</i>
33	Nilgiri keelback	<i>Amphiesma beddomei</i>
34	Green keel back	<i>Macropisthodon plumbicolor.</i>
35	(Common Kukri Snake)	<i>Oligodon arnensis</i>
36	Streaked Kukri Snake	<i>Oligodon taeniolatus</i>
37	Common cat snake	<i>Boiga trigonatus.</i>
38	Gunther's Vine Snake	<i>Ahaetulla dispar</i>
39	Common vine snake	<i>Ahaetulla nasuta</i>
40	Black headed snake	<i>Sibynophis subpunctatus.</i>
41	Beaked Worm Snake	<i>Typhlops acutus</i>
42	Slender Worm Snake	<i>Typhlops porrectus</i>
43	Thurston's worm snake	<i>Typhlops thurstoni</i>
44	Elliot's earth snake	<i>Uropeltis ellioti</i>
	Family: BOIDAE	
45	Indian rock python	<i>Python molurus</i>
46	Russel's sand boa	<i>Eryx conica.</i>
	Family: ELAPIDAE	
47	Spectacled cobra	<i>Naja naja</i>
48	Common krait	<i>Bungarus caeruleus.</i>
	Family: VIPERIDAE	
49	Russel's viper	<i>Vipera russelii</i>
50	South Indian saw – scaled viper	<i>Echis carinatus.</i>
51	Large-scaled green pit viper	<i>Trimeresurus macrolepis</i>
52	Malabar pit viper	<i>Trimeresurus malabaricus.</i>

Amphibians of Chinnar Wildlife Sanctuary

No.	Common Name	<i>Scientific Name</i>
Family: BUFONIDAE		
1	Southeast Asian Toad	<i>Bufo melanostictus</i>
2	Southern Hill Toad	<i>Bufo microtympanum</i>
3	Ridged Toad	<i>Bufo parietalis</i>
Family: MICROHYLIDAE		
4	Ornate Narrow-mouthed Frog	<i>Microhyla ornata</i>
Family: RANIDAE		
5	Beddome's Leaping Frog	<i>Indirana beddomii</i>
6	Kerala warty frog	<i>Limnonectes keralensis</i>
7	Indian Bullfrog	<i>Hoplobatrachus tigerinus,</i>
8	Black torrent frog	<i>Micrixalus saxicola</i>
9	Malabar Night Frog	<i>Nyctibatrachus major</i>
10	Green Pond Frog	<i>Euphlyctis hexadactylus</i>
11	Bronzed frog	<i>Rana temporalis</i>
12		<i>Rana Sp.</i>
Family: RHACOPHORIDAE		
13	Malabar Flying Frog	<i>Rhacophorus malabaricus</i>
14	Common Tree Frog	<i>Polypedatus maculatus</i>
15	Beddome's bush frog	<i>Philautus beddomii</i>

Fishes of Chinnar Wildlife Sanctuary

No.	Common Name	Scientific Name
Family: CYPRININAE		
1	Melon Barb (Vazhakka varayan)	<i>Puntius fasciatus</i>
2	Karnataka Barbe (Pachilavetti)	<i>Puntius carnaticus</i>
3	Deccan mahseer (Kuyil)	<i>Tor khudree</i>
Family: CULTRINAE		
4	Silver razorbelly minnow (Vella chaekendai)	<i>Salmostoma acinaces</i>
Family: GARRINAE		
5	Mullya garra (Kalle mutti)	<i>Garra mullya</i>
6	Nilgiris garra (Kallotti meen)	<i>Garra gotyla stenorhynchus</i>
7	Cardamon garra (Kallunthi)	<i>Garra hughi</i>
Family: COBITIDAE		
8	Indian Spiny Loach (Ailori)	<i>Lepidocephalus thermalis</i>
Family: RASBORINAE		
9		<i>Parlusciosoma daniconius</i>
10	Hamilton's barila (Pavay paral)	<i>Barilius bendelisis</i>
11	Malabar Baril (Pavay paral)	<i>Barilius gatensis</i>
12	Giant Danio (Ozhukkilatti)	<i>Danio aequipinnatus</i>
Family: NOEMACHEILINAE		
13		<i>Nemacheilus denisoni</i>
Family: CICHLIDAE		
14	Mozambique Tilapia	<i>Oreochromis mossambicus</i>

Butterflies of Chinnar Wildlife Sanctuary

No.	Common name	Scientific name
Family: PAPILIONIDAE		
1	Southern Birdwing	<i>Troides minos</i>
2	Common Rose	<i>Pachliopta aristolochiae</i>
3	Crimson Rose	<i>Pachliopta hector</i>
4	Common Bluebottle	<i>Graphium sarpedon</i>
5	Common Jay	<i>Graphium doson</i>
6	Tailed Jay	<i>Graphium agamemnon</i>
7	Spot Swordtail	<i>Graphium nomius</i>
8	Common Mime	<i>Papilio clytia</i>
9	Lime Butterfly	<i>Papilio demoleus</i>
10	Red Helen	<i>Papilio helenus</i>
11	Common Mormon	<i>Papilio polytes</i>
12	Blue Mormon	<i>Papilio polymnestor</i>
13	Paris Peacock	<i>Papilio paris</i>
14	Common Banded Peacock	<i>Papilio crino</i>
Family: PIERIDAE		
15	Common Emigrant	<i>Catopsilia pomona</i>
16	Mottled Emigrant	<i>Catopsilia pyranthe</i>
17	Small Grass Yellow	<i>Eurema brigitta</i>
18	Spotless Grass Yellow	<i>Eurema laeta</i>
19	Common Grass Yellow	<i>Eurema hecabe</i>
20	Three Spot Grass Yellow	<i>Eurema blanda</i>
21	Nilgiri Grass Yellow	<i>Eurema nilgiriensis</i>
22	Nilgiri Clouded Yellow	<i>Colias nilgiriensis</i>
23	Common jezebel	<i>Delias eucharis</i>
24	Psyche	<i>Leptosia nina</i>
25	Painted Sawtooth	<i>Prioneris sita</i>
26	Indian cabbage white	<i>Pieris canidia</i>
27	Common Gull	<i>Cepora nerissa</i>
28	Pioneer or Caper White	<i>Anaphaeis aurota</i>
29	Plain Puffin	<i>Appias indra</i>
30	Common Albatross	<i>Appias albina</i>
31	Lesser Albatross	<i>Appias wardii</i>

32	Small Orange Tip	<i>Colotis etrida</i>
33	Plain Orange Tip	<i>Colotis eucharis</i>
34	Crimson Tip	<i>Colotis danae</i>
35	Blue – Spotted Arab	<i>Colotis phisadia</i>
36	Large Salmon Arab	<i>Colotis fausta</i>
37	White Orange Tip	<i>Ixias marianne</i>
38	Yellow Orange Tip	<i>Ixias pyrene</i>
39	Common Wanderer	<i>Pareronia valeria</i>
40	Great Orange Tip	<i>Hebomoia glaucippe</i>

Family: NYMPHALIDAE

41	Common Evening Brown	<i>Melanitis leda</i>
42	Great Evening Brown	<i>Melanitis zitenius</i>
43	Common Palmfly	<i>Elymnias hypermenstra</i>
44	Bamboo Treebrown	<i>Lethe europa</i>
45	Common Treebrown	<i>Lethe rohria</i>
46	Whitebar Bushbrown	<i>Mycalesis anaxias</i>
47	Common Bushbrown	<i>Mycalesis perseus</i>
48	Dark Banded Bushbrown	<i>Mycalesis mineus</i>
49	Glad Eye Bushbrown	<i>Mycalesis patnia</i>
50	Red-Disk Bushbrown	<i>Mycalesis ocellus</i>
51	Palni Bushbrown	<i>Mycalesis davisoni</i>
52	Nigger	<i>Orsotriaena medus</i>
53	Tamil Casteye	<i>Zipoetis saitis</i>
54	White or Ceylon Four Ring	<i>Ypthima ceylonica</i>
55	Common Four-ring	<i>Ypthima huebneri</i>
56	Common Five-ring	<i>Ypthima baldus</i>
57	Palni Four-ring	<i>Ypthima ypthimoides</i>
58	Common Nawab	<i>Polyura athamas</i>
59	Tawny Rajah	<i>Charaxes bernardus</i>
60	Tawny Coster	<i>Acraea violae</i>
61	Tamil Lacewing	<i>Cethosia nietneri</i>
62	Rustic	<i>Cupha erymanthis</i>
63	Common Leopard	<i>Phalanta phalantha</i>
64	Tamil Yeoman	<i>Cirrochroa thais</i>
65	Indian Fritillary	<i>Argyreus hyperbius</i>
66	Common Sailor	<i>Neptis hylas</i>
67	Shortbanded Sailor	<i>Neptis columella</i>
68	Common Lascar	<i>Pantoporia hordonia</i>

69	Common Sergeant	<i>Athyma perius</i>
70	Commander	<i>Limenitis procris</i>
71	Common Baron	<i>Euthalia aconthea</i>
72	Angled Caster	<i>Ariadne ariane</i>
73	Common Castor	<i>Ariadne merione</i>
74	Common Map	<i>Cyrestis thyodamas</i>
75	Common Beak	<i>Libythea lepita</i>
76	Yellow Pansy	<i>Junonia bierta</i>
77	Blue Pansy	<i>Junonia orithya</i>
78	Lemon Pansy	<i>Junonia lemonias</i>
79	Peacock pansy	<i>Junonia almana</i>
80	Grey Pansy	<i>Junonia atlites</i>
81	Chocolate Pansy	<i>Junonia iphita</i>
82	Painted Lady	<i>Cynthia cardui</i>
83	Indian Red Admiral	<i>Vanessa indica</i>
84	Blue Admiral	<i>Kaniska canace</i>
85	Great Eggfly	<i>Hypolimnas bolina</i>
86	Danaid Eggfly	<i>Hypolimnas misippus</i>
87	Glassy Tiger	<i>Parantica aglea</i>
88	Nilgiri Tiger	<i>Parantica nilgiriensis</i>
89	Blue Tiger	<i>Tirumala limniace</i>
90	Dark Blue Tiger	<i>Tirumala septentrionis</i>
91	Plain Tiger	<i>Danaus Chrysippus</i>
92	Stripped or Common Tiger	<i>Danaus genutia</i>
93	Common Indian Crow	<i>Euploea core</i>
94	Double Banded Crow	<i>Euploea sylvester</i>

Family: LYCAENIDAE

95	Plum Judy	<i>Abisara echerius</i>
96	Common Pierrot	<i>Castalius rosimon</i>
97	Angled Pierrot	<i>Caleta caleta</i>
98	Banded Blue Pierrot	<i>Discolampa ethion</i>
99	Zebra Blue	<i>Leptotes plinius</i>
100	Bright Babul Blue	<i>Azanus ubaldus</i>
101	African Babul Blue	<i>Azanus jesous</i>
102	Indian Cupid	<i>Everes lacturnus</i>
103	White Hedge blue	<i>Udara akasa</i>
104	Common Hedge Blue	<i>Actolepis puspa</i>
105	White Disc Hedge Blue	<i>Celatoxia albidisca</i>

106	Quaker	<i>Neopithecops zalmora</i>
107	Pale Grass Blue	<i>Psuedozizeeria maha</i>
108	Dark Grass Blue	<i>Zizeeria karsandra</i>
109	Lesser Grass Blue	<i>Zizina otis</i>
110	Tiny Grass Blue	<i>Zizula hylax</i>
111	Lime Blue	<i>Chilades laius</i>
112	Plains Cupid	<i>Chilades pandava</i>
113	Grass Jewel	<i>Freyeria trochylus</i>
114	Gram Blue	<i>Euchrysops cnejus</i>
115	Forget-Me-Not	<i>Catochrysops strabo</i>
116	Pea Blue	<i>Lampides boeticul</i>
117	Dark Cerulean	<i>Jamides bochus</i>
118	Common Cerulean	<i>Jamides celeno</i>
119	Metallic Cerulean	<i>Jamides alecto</i>
120	Line Blue	<i>Nacaduba sp.</i>
121	Common Line Blue	<i>Prosotas nora</i>
122	Red Pierrot	<i>Talicauda nyseus</i>
123	Ciliate Blue	<i>Anthene emolus</i>
124	Western Centaur Oak Blue	<i>Arhopala pseudocentarus</i>
125	Common Acacia Blue	<i>Surendra quercetorum</i>
126	Common Silverline	<i>Spindasis vulcanus</i>
127	Monkey Puzzle	<i>Rathinda amor</i>
128	Nilgiri Tit	<i>Hypolycaena nilgirica</i>
129	Common Guava Blue	<i>Deudorix isocrates</i>
130	Indian Red Flash	<i>Rapala jarbus</i>
131	Slate Flash	<i>Rapala manea</i>
132	Indian Sunbeam	<i>Curetis thetis</i>

Family: HESPERIDAE

133	Common Banded Awl	<i>Hasora chromus</i>
134	White Banded Awl	<i>Hasora taminatus</i>
135	Brown Awl	<i>Badamia exclamationis,</i>
136	Common Spotted Flat	<i>Celaenorrhinus leucocera</i>
137	Malabar Spotted Flat	<i>Celaenorrhinus ambareesa</i>
138	Immaculate/Large/Suffused Snow Flat	<i>Tagiades gana</i>
139	Water Snow Flat	<i>Tagiades litigiosa</i>
140	Fulvous Pied Flat	<i>Psuedocoladenia dan</i>
141	Common Snow Flat	<i>Sarangesa dasahara</i>
142	Angled Flat	<i>Tapena twaithesi</i>

143	Golden Angle	<i>Odontoptilum ransonnetti</i> ,
144	African Mallow/ Marbled Skipper	<i>Gomalia elma</i>
145	Indian Grizzled / Indian Skipper	<i>Spialia galba</i>
146	Chestnut Bob	<i>Iambrix salsala</i>
147	Common Banded Demon	<i>Notocrypta paralysos</i>
148	Restricted Demon	<i>Notocrypta curvifascia</i> ,
149	Grass Demon	<i>Udaspes folus</i>
150	Indian Palm Bob	<i>Suastus gremius</i> ,
151	Common Grass Dart	<i>Taractrocera maevius</i> ,
152	Tamil Grass Dart	<i>Taractrocera ceramas</i>
153	Tamil Dartlet	<i>Oriens concinna</i> *
154	Indian/Common Dartlet	<i>Oriens goloides</i>
155	Rice Swift	<i>Borbo cinnara</i>
156	Spot Puffin	<i>Appias lalage</i>

List of Control Forms

FORM - 1

Creation of new artificial waterholes

Sl. No	Category	year	Location	Cost	Performance
1	2	3	4	5	6

- Note :
- Category : Masonry anicut, earthen bund, lined depression, bore well and pump, reservoir, spring fed, tanker fed, guzzler, aquifer; permanent or temporary
 - Location : By compartment or by a named feature and name given if any
 - Performance : Successful, partially successful, failure (give reasons for the latter two)

FORM - 2

Maintenance of waterholes: Natural

Sl. No	Category	Perennial or seasonal	Location	Year	Nature of work	Cost	Performance
1	2	3	4	5	6	7	8

- Note :
- Category : Spring, seep, natural depression, a flowing stretch, reservoir
 - Location : By compartment or by a named feature and name given if any
 - Nature of work : Desilting, provision of apron, any other category
 - Performance : Successful, partially successful, failure (give reasons for the latter two)

FORM - 3

Maintenance of waterholes: Artificial

Sl. No	Category	Perennial or seasonal	Location	Year	Nature of work	Cost	Performance
1	2	3	4	5	6	7	8

- Note :
- Category : Masonry anicut, earthen bund, lined depression, bore well and pump, spring fed, guzzler, aquifer etc.
 - Location : By compartment or by a named feature and name given if any
 - Year : Year of maintenance, with year of establishment in parenthesis.
 - Nature of work : Desilting, grouting, repairing leaks, repair to mechanical parts, closing anicut openings, any other work
 - Performance : Successful, partially successful, failure (give reasons for the latter two)

FORM - 4

Restoration of habitat: weed control

Sl. No	Location & name of site	Year	Extent of area(ha)	Species of weed	Operation	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9

- Note :
- Location : By compartment, site name or land feature
 - Operation : Uprooting, cutting, burning, ploughing, manual or by using animals or machinery
 - Remarks : Measure of success and or problem faced.

FORM - 5

Restoration of habitat: Prescribed burning

Sl. No	Location & name of site	Year	Extent of area(ha)	Area treated(ha)	Period	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9

Note : Location : By compartment or name of site
 Period : Date of starting operation and completion
 Remarks : Mention resultant structure e.g. a mosaic, % burnt, % intact
 Problems encountered in conducting the operation – e.g. fire escape.

FORM - 6

Restoration of habitat: Soil Conservation measures – initial operations and subsequent maintenance

Sl. No	Location & name of site	Year	Extent of area(ha)	Area treated(ha)	Operations	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9

Note : Location : By compartment, name of site or landmarks
 Extent of area : Total area identified for such treatment. In case of streams or gullies, the length involved
 Area treated : If linear feature then quote length; otherwise area.
 Operation : Structures involved such as gully plugs, trench-cum-mound, terracing, spurs and bunds etc. quote quantity nos. and cmt. of earthwork.
 Remarks : Mention if initial work or maintenance.

FORM - 7

Animals: Measuring trends in populations

Sl. No.	Species	Population estimation methodology	Adult		Sub-adults		Year-lings	Fawns	Cubs	Total	Remarks
			Male	Female	Male	Female					
1	2	3	4	5	6	7	8	9	10	11	12

Note : Population estimation : e.g. pugmark, line transect, scan, roadside counts etc., area covered, sampling intensity, data treatment, extrapolation where involved. In case of indices of density or dung count, mention those figures under the remarks column; use details as pertinent. Describe age classes for each species.

Remarks : Operational problems, protection problems, any other useful information. Indices of density or dung count details to be recorded here

FORM - 8

Animals: New records

Sl. No	Species	Location	Year	How discovered	Details of number, age sex	Habitat description	Remarks
1	2	3	4	5	6	7	8

Note : Animal will include vertebrates and invertebrates

How discovered : Sighting, dead specimen, reliability of sighting, captured specimen, incontrovertible other evidence

No., age, sex etc : As applicable to vertebrates Habitat

Description : Broad habitat description such as vegetation, and elements such as water, large old trees, den trees, snags, down log material. Use microhabitat descriptors only if relevant

Remarks : Any other useful information

FORM - 9

Animals: Mortality other than that attributable to an offence

Sl. No	Species	Location	Year	Sex and age	Number	How discovered	Cause of mortality	Remarks
1	2	3	4	5	6	7	8	9

- Note :
- Location : By compartment, landmark etc.
 - Sex and age : As per parameters for age class. Sex, if possible to identify.
 - How discovered : Carcass, complete or partial. Skull or any other recognizable remains collected where only some remains of an animal are found.
 - Cause of mortality : If known e.g. territorial fight, accident, possible disease (following postmortem results), old age cause difficult to determine, predation etc.
 - Remarks : Any other useful information

FORM - 10

Animals: Mortality attributed to poaching or an act of vandalism

Sl. No	Species	Location	Cause of mortality, number, sex age class	Remarks
1	2	3	4	5

- Note :
- Location : By compartment or landmarks
 - Cause of mortality : Whether the animal was intact or remains found, article or trophy to be recorded. Cause if known eg. animal snared, shot or poisoned etc.
 - Remarks : Any other useful information, especially matters of illegal trade.

FORM - 11

Animals: Predation on domestic livestock by wild carnivores

Sl. No	Range	Month	Category of livestock killed	Location	Numbers	Compensation paid (Rs.)	Carnivore involved	No. of cases undecided	Remarks
1	2	3	4	5	6	7	8	9	10

- Note:**
- Category of livestock killed : Buffalo, cow, bullock (adult, sub-adult, calf), camel, horse, donkey, sheep, goat, poultry etc.
 - Location : Comptt. no. or landmark where killed and the village of the owner
 - Carnivore involved : Indicate species responsible for the kill if identity is confirmed
 - No. of cases undecided : Either in progress or dropped.
 - Remarks : Record observations like - attended or unattended animal, killed in forest or waterhole or in the pen/shed, field and whether kill was in area closed to livestock trespass.

FORM - 12

Animals: Killing of a human by wildlife or injury caused

Sl. No	Range	Month	No. of incidents	No. of people killed, age & sex	Location, circumstances & species	No. of people injured, age & sex	Location, circumstances & species	Compensation (Rs.)
1	2	3	4	5	6	7	8	9

- Note :**
- Location : Location by comptt no., the village to which the person belongs and a description of the site and
 - Circumstances : activity such as – open grassy patch, cutting grass; or under a mahua tree collecting flowers etc.
 - Species : Mention species on proof.

FORM - 13

Animals: Wildlife damage to private or public property

Sl. No	Range	Month	The category of property	Extent of damage	Species involved and number	Remarks
1	2	3	4	5	6	7

Note : Location : By comptt. no., village survey no., name of village or landmark
 Category of property : eg. agriculture field-wheat, huts in a village, any kind of vehicle.
 Extent of damage : Crop damage by area, estimated loss of produce and monetary loss. Similar yardsticks for other items like partial or total destruction of huts and belongings with estimated monetary loss
 Remarks : Any relevant information or circumstances eg. a wild elephant was provoked by people.

FORM - 14

NWFP Collection: Plants and other produce

Year:

Sl. No	Range	Month	The category of property	Extent of damage	Species involved and number	Remarks
1	2	3	4	5	6	7

Note : Location : By comptt. no., village survey no., name of village or landmark.
 Category of property : eg. Agriculture field-wheat, huts in a village, any kind of vehicle.
 Extent of damage : Crop damage by area, estimated loss of produce and monetary loss. Similar yardsticks for other items like partial or total destruction of huts and belongings with estimated monetary loss
 Remarks : Any relevant information or circumstances eg. a wild elephant was provoked by people.

FORM - 15

Grazing of domestic livestock

Year:

Sl. No.	Grazing unit No.	List of villages in the unit	Village-wise listed population of cattle	Capacity of the unit (cattle units) an number of cattle grazed	Total cattle unit grazed		Remarks
					Legal	Illegal	
1	2	3	4	5	6	7	8

Note : Remarks : (i) Mention number of cattle immunized against FMD, RP, anthrax as the case might be and the number of cattle without the prophylactic cover
(ii) If grass is allowed to be cut for cattle being stall-fed, mention the village and number of such cattle.

FORM - 16

Inter-agency programmes: Agencies and schemes (Government)

Year:

Sl. No.	Name of Agency	Central or State	Number and name of scheme operated	Physical and financial targets		Area and location	Remarks
				Given	Achieved		
1	2	3	4	5	6	7	8

Note : Name of the Scheme : To include all activities in the Govt. Sector, i.e. construction, use of resources, development processes etc. mention names of schemes, projects or normal operations. This will address all departments in the management area and those activities outside but capable of influencing the management area.

Remarks : Success, adverse impacts, incompatibility with PA management objectives or failures should be mentioned. Detailed notes to go in the PA book.

FORM - 17
Programmes of NGOs
Year:

Sl. No.	Name of Agency	HQ location	Nature of the scheme operated	Physical and financial targets		Area and location	Remarks
				Given	Achieved		
1	2	3	4	5	6	7	8

Note : Remarks : Success or adverse impacts, incompatibility with PA management objectives or failures should be mentioned. Detailed notes to go in the PA Book. These programmes and activities could be within the management area or those that are outside the management area but are capable of influencing the state of the management area – either complementing efforts or adversely impacting.

FORM - 18
Construction*/maintenance* of infrastructure: Roads and Bridges (*existing/new)
Year:

Sl. No.	Category	Range	Surface	Name or number	Length covered (km)	Cross, drainage works, bridges with types	Total cost and status
1	2	3	4	5	6	7	8

Note : Category of road : National/State highway, district road etc. public road or open only to managers should be stated
 Surface type : Block topped, metal, earth etc. Applies to roads..
 Name or number : As the case may be.
 Cross drainage type : eg. for culverts – box, hume pipe culverts etc.
 Bridge type : Wooden trestle, suspension, metal multi span, masonry arch etc.
 Status : Work completed or ongoing. State also the agency responsibility; state whether operational or non-operational
 * : Strike out which is not applicable. Use separate forms as required; for construction and for maintenance details.

FORM - 19

Construction*/maintenance* of infrastructure: buildings (*existing/new)

Year:

Sl. No.	Range	Name of the building	Location	Type of construction	Numbers	Total cost	Status
1	2	3	4	5	6	7	8

Note : Nature of the building : eg. residential(Guard), office, store, chauki, watch tower, tourist facility, hide, barrier, patrolling camp (temporary or permanent) etc.

Location : the By compartment or village or landmark as appropriate.

Type of construction : Masonry (brick/stone), log or wooden, metal, local material etc.

Status : Completed or ongoing.

* : Strike out which is not applicable. Use separate forms as required; for construction and for maintenance details.

FORM - 20

Development*/maintenance* of infrastructure: communication (*existing/new)

Year:

Sl. No.	Range	Name of facility	Location	Number	Cost	Advantage gained	Remarks
1	2	3	4	5	6	7	8

Note : Type of facility : eg. telephone, wireless

Location : Staff HQ location, village, landmark etc.

Advantage gained : Area's served, staff locations connected etc.

Remarks : Record status – complete, ongoing, functional, non-functional.

* : Strike out which is not applicable. Use separate forms as required; for construction and for maintenance details.

FORM – 21

Development*/maintenance* of infrastructure: vehicles (*existing/new)

Year:

Sl. No.	Kind of vehicle	Number	HQ if any	Intended use	Cost	Remarks
1	2	3	4	5	6	7

- Note :** Kind of vehicle : Jeep, trailer, tractor, truck, minibus, tanker, motorcycle, bicycle, boat (paddle or motor), launch, car, riding elephant, ponies, etc.
- Intended use : Management support, patrolling/anti poaching, tourism etc.
- Remarks : Any other useful information. Mention written off vehicles, retired or dead animals.
- * : Strike out the inapplicable. Use separate forms as required to indicate acquisition, maintenance.

FORM - 22Developing infrastructure: construction of boundaries
Fences, CPTs, EPTs, exclosures, enclosures (*existing/new)

Year:

Sl. No.	Category of construction	Range	Location	Length (meters)	Numbers	Specifications	Remarks
1	2	3	4	5	6	7	8

- Note :** Category : Kind of boundary eg. comptt, block, zone etc. In case of fences: power fence, others
- Location : By compartment or suitable landmark.
- Numbers : In case of exclosures, enclosures, number of pillars etc. as applicable.
- Specifications : As applicable to the construction: dry rubble, chain link, local material, height, area, depth, width etc.
- Remarks : Any other relevant information.
- * : Strike out that is inapplicable. Use a form each for maintenance of existing features and for new features.

FORM - 23

Developing infrastructure: firelines (*existing/new)

Year:

Sl. No.	Range	Fireline category or width	Name of points connected	Length (meters)	Cost	Remarks
1	2	3	4	5	6	7

Note : Category : Main or subsidiary etc. Record width
 * : Strike out that is inapplicable. Use one form each for maintenance of existing fire line and creation of new

FORM - 24

Tourism

Total number of visitors all categories :

Year:

Name of complex:

Total revenue earned:

Sl. No.	The category of visitors by month & numbers					Indian			No. days visitors	No staying overnight and revenue
	Adult			Children	Foreigners	Rural	Urban	Revenue		
	Month	Male	Female							
1	2	3	4	5	6	7	8	9	10	11

Note : : Column 2 to 5 will be written in three successive lines for the month pertinent, one below the other. First line information pertains to foreign tourists. Put a tick(✓) in col. 6. Second and third line details rural and urban tourists respectively. Put a tick (✓) in Col. 7, Column 8 as applicable.

FORM - 25
Outbreak of fires
Year:

Sl. No.	Range	Location	Extent (ha)	Dates		Reasons	Estimated loss	Remarks
				Detected	Controlled			
1	2	3	4	5		6	7	8

- Note :** Location : By compartments
Reasons : Established or suspected
Estimated loss : eg. number of trees damaged, stacked firewood/timber/bamboo destroyed/damaged by volume and cost, wild animals dead, particulars of sensitive sites affected, other property or life destroyed.
Remarks : State particularly problems encountered in detection and suppression and any other useful information. State also whether the extent of fire has been mapped.

FORM - 26
Offence cases detected
Year:

Sl. No.	Range	category	Numbers	Number of cases decided		Number of cases under process	Number of cases compounded	Remarks
				Successful	Failure			
1	2	3	4	5		6	7	8

- Note :** Category : eg. illegal cutting of trees, illegal firewood, illegal NWFP, poaching, encroachment, illegal cattle grazing etc. category be codified by letters of alphabet.
Remarks : Any other useful information. This should also include the number of cases pending decision with the Department. The cases under column 8 pertain to area of non PA status under management which do not involve an endangered species (Schedule-I).

FORM - 27
Incentives and awards
Year:

Sl. No.	Range	Number of recipients of incentives for detecting offences	Amount paid (Rs.)	Kind of award	Number of recipients	Remarks
1	2	3	4	5	6	7

- Note :**
- Kinds of award : eg. a medal like the Shaurya Chakra, any other such awards instituted by the State or Central Government, includes citations, extra increments etc.
- Remarks : Any other useful information. If an award carries cash, mention the amount.

FORM - 28
Research projects under implementation through PA manpower with or without collaboration with other agencies
Year:

Sl. No.	Title	Completed	Ongoing	New	Status	Financial outlay(Rs.)	Expenditure incurred (Rs.)	Remarks
1	2	3	4	5	6	7	8	9

- Note :**
- Completed : State date of completion and the status of the project report
- Ongoing : State since when the project is under operation and expected period of completion
- New : State the date of commencement and duration.
- Status : State the progress towards achievement of objectives; or project which has been dropped or held in abeyance etc
- Remarks : Any other relevant information. If the project is in collaboration with any other agency or is an contractual arrangement, state the situation and the name of the collaborating agency. If animal/plant specimen are being collected, state authority and where the collections are being housed.

FORM - 29
Survey and inventories
Year:

Sl. No.	Title of survey, inventory activity	Completed	Ongoing	New	By PA	By other agency	Remarks
1	2	3	4	5	6	7	8

- Note :**
- Completed : State date of completion of field work and the status of the report
 - Ongoing : State since when is it under operation and when is it expected to be completed.
 - New : State the date of commencement and duration.
 - By PA : Will include collaboration or contractual arrangement. State the personnel case as relevant.
 - Other agency : State the name of the agency.
 - Remarks : If specimen of plants /animals are being collected, state where the collection is being housed and authority. Any other useful information.

FORM - 30
The Monitoring Programme
Year:

Sl. No.	Title of the programme	Date of initiation	Responsible agency	Technique	Status of collaboration and analysis of data	Remarks
1	2	3	4	5	6	8

- Note :**
- Technique : PCQ, belt transect, line transect and plots, pugmarks etc. by the title of the technique.
 - Status of collaboration : Write only if applicable.

FORM - 31

Eco development Programme: Targets and implementation

Year:

Sl. No.	Nature of the programme	Sector (Central / State) or NGO sponsored	Target set		Achievements		Village (Buffer / enclaved)	Remarks
			Physical	Financial	Physical	Financial		

- Note :**
- Nature of the programme : eg. Pasture development, fodder plantations, establishing biogas units, livestock improvement, establishment and development of sericulture, revival of local skills such as handicraft, water harvesting systems, adult's education etc.
- Village : Site where programme is being implemented – whether buffer or inside PA
- Remarks : State problems, state failures and reasons thereof, reasons for not attaining targets, for non-implementation or deviation etc. State whether it is on the right tracks in context of achievement of objectives

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