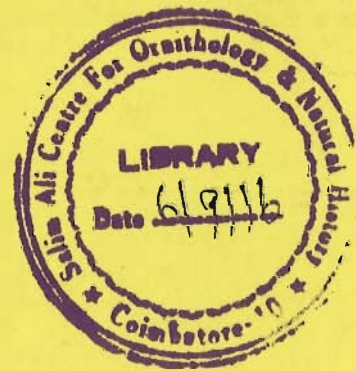


PR-162

# **A brief documentation of elephant corridors in Southern India**

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# A brief documentation of elephant corridors in Southern India



*Compiled by*

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## Contents

Introduction .....	1
<b>Karnataka</b>	
1. Kaniyanpura corridor .....	3
2. Faith-Narikal-Huvinakadavu estates corridor .....	3
3. Faith-Narikal-Huvinakadavu estates corridor .....	4
4. Faith-Narikal-Huvinakadavu estates corridor .....	4
5. Punjur - Kolipalya corrtidor .....	5
6. Talavadi - Mudahalli corridor .....	5
7. Bakkatur - Arabikere corridor .....	6
8. Sampaje corridor .....	7
9. Nanjarayapatna corridor .....	7
<b>Tamil Nadu</b>	
1. Chattiramdoddi-Hunsanhalli corridor .....	9
2. Kempatahalli Corridor .....	9
3. Attakati-Upper Aliyar corridor .....	10
4. Ayarpadi Waterfall Corridor .....	10
5. Siluvaimedu-Kadamparai Corridor .....	10
6. Mudumalai-Karian shola-Nilambur Corridor .....	11
7. Mavinhalla-Chemmanattham .....	11
8. Moyar valley-Eastern Ghats corridor .....	12
9. Sujalkuttai-Bannari corridor .....	13
10. Kallampalayam-Uppupallam .....	14
11. Kallar-Vedar colony corridor .....	15
12. Kallar-Jaccanari corridor .....	16
13. Kallar-Nellithurai corridor .....	16
14. Moyar-Avarhalla corridor .....	17
15. Singara-Mavinhalla corridor .....	18
16. North Palanis corridor .....	19
17. High Range corridor .....	20
18. South Palnis corridor .....	20
19. Cardamom hills corridor .....	21
20. Shencottah corridor .....	22
21. Periyar Tiger Reserve-Sivagiri-Tirunelveli Division-Deviar-Srivilliputtur Division .....	22
22. Periyar Tiger Reserve-Deviar Estate-Srivilliputtur Division .....	22
23. Periyar Tiger Reserve-Megamalai RF-Kambathu Perumal-Ayyanarkoil-Srivilliputtur Division .....	22
24. Megamalai RF-Varushanadu-Srivilliputtur RF-Pilavakkal Dam .....	22
25. Pilavakkal-Kovilar Dam-Kottamalai Valley .....	22
<b>Kerala</b>	
1. Mannarghat-Mukali Ghat road corridor .....	24
2. Mattupatti Corridor .....	24
3. Periya corridor .....	25
4. Pakranthalam corridor .....	25
5. Brahmagiri - Tirunelli corridor .....	26
6. Chiambam Corridor .....	27
7. Kakkeri-Panikal Corridor .....	27
8. Pallivayal-Tattur corridor .....	28
9. Faith-Narikal-Huvinakadavu estates Corridor .....	28
Conclusion .....	29

## INTRODUCTION

Forest corridors are narrow strips of forests connecting two habitats that facilitates major functions such as exchange of genes between populations, dispersal, access to seasonal foraging grounds and prevention of faunal collapse due to extinction. The use of corridors by various animals depends on their ranging behaviour and the size and physical features of the corridors. Some animals use the corridors effectively, while others do not. Elephants use the corridors as part of their ranging between habitats. The quality of elephant corridors is mostly affected by human threats such as wood collection and cattle grazing. Developmental activities such as hydel projects and roads have also hampered the forest contiguity across elephant reserves in Southern India. The rapid invasion of weeds further degrade the quality of corridors. Ultimately, these pressures reduce the resource availability to elephants, leading to crop raiding and other man-elephant conflict.

Project Elephant, a scheme sponsored by the Government of India, has designated 10 elephant reserves in the country, of which four are in Southern India. These elephant reserves comprise several forest administrative units with varying conservation priorities and management practices.

One of the major goals of the Project Elephant scheme is to protect and safeguard the existing corridors between elephant habitats. The present compilation of the status of corridors in southern states is based on the following sources:

- Sukumar *et al.*, 1998. The Asian Elephant in Southern India: A GIS database for conservation of project elephant reserves, Indian Institute of Science, Bangalore.
- Sivaganesan, N. and Ajith Kumar, 1999. Status of wildlife corridors and their use by mammals with special reference to selected endangered mammals in the Nilgiri Biosphere Reserve, South India, Final Technical Report, SACON.
- Rauf Ali (unpubl). Elephant corridors in the Southern Ranges of the Western Ghats, Palani Hills Conservation Council, Kodaikanal.
- Tamil Nadu Forest Department (Srivilliputhur Division).



## KARNATAKA STATE

### 1. Kaniyanpura corridor (Bandipur Project Tiger Reserve)

This corridor connects the western parts of the Bandipur National Park with its eastern extremities. This area maintains a contiguity to habitats within the Sathyamangalam and Chamrajnagar Divisions. The corridor is extremely narrow (20 m wide) and is bordered on one side by an elephant proof trench running through private land and on the other, by the steep slopes of the Moyar gorge. There exists a need to purchase private lands to widen this corridor.

**Status:** North of the Moyar Gorge, the elephants move from the eastern parts of Bandipur into the western portion and then on into the Sathyamangalam Division. There is movement of elephants between Bandipur and Eastern Ghats through this corridor.

**Threat:** Agricultural lands and human settlements outside the Reserve.

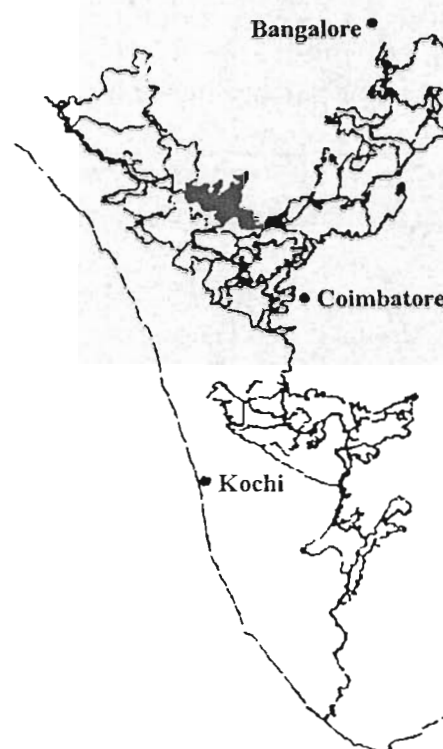
#### Conservation problems

- Very high human-elephant conflict as the Park abuts cultivation all around.
- High elephant mortality due to poaching, electrocution and possibly poisoning.
- Encroachment in the bordering habitats.

#### Conservation priorities

- ◆ Mitigating human-elephant conflict.
- ◆ Effective anti-poaching operation along the interstate boundaries.

#### BANDIPUR PROJECT TIGER RESERVE



### 2. Faith-Narikal-Huvinakadavu estates corridor (Brahmagiri WLS)

**Status:** Connects Brahmagiri, Nagarhole, Wynad WLS and Virajpet forest division through a number of coffee and cardamom estates

**Threat :** Human habitations and subsequent human-elephant conflict.

#### Conservation problems

- Seven settlements within and 46 settlements adjoining the sanctuary. Many people have been killed by elephants. Human-elephant conflict is very severe.

- Faith estate, where the forest demarcation line (D-line) is located has an encroachment problem

#### Conservation priorities

- ◆ Survey should be carried out to identify the extent of encroachment in the D-line.
- ◆ Effective fire control measures should be taken as the sanctuary acts as a refugium for elephants during the dry season.
- ◆ Mitigating human-elephant conflict. To avoid this problem and to create a corridor, the areas which are frequently used by the elephants as corridors should be surveyed for the possibility of purchasing segments.

### 3. Faith-Narikal-Huvinakadavu estates corridor (Hunsur division)

**Status:** Connects Brahmagiri, Nagarhole, Wynad WLS and Virajpet division through a number of coffee and cardamom estates.

**Threat :** Human habitations and subsequent human-elephant conflict

#### Conservation problems

- 54 tribal settlements within the Park and 45 villages adjoining it.
- Forest fire, cattle grazing and minor forest produce collection.
- Crop raiding.
- Poaching for ivory.

#### Conservation priorities

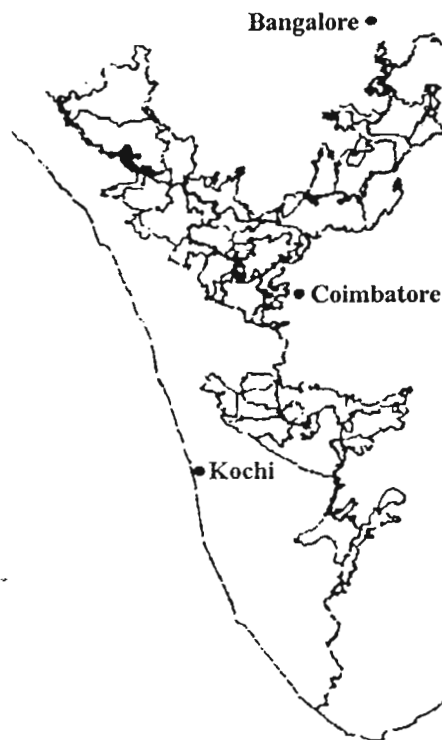
- ◆ Maintenance of elephant proof trenches (EPT) and other elephant barriers through local support.
- ◆ Effective fire control measure.
- ◆ Patrolling the interstate boundaries to prevent poaching.

### 4. Faith-Narikal-Huvinakadavu estates corridor (Virajpet)

**Status:** Connects Brahmagiri, Nagarhole, Wynad WLS and Virajpet divisions through a number of coffee and cardamom estates.

**Threat :** Human habitations and subsequent human-elephant conflict.

#### BRAHMAGIRI WILDLIFE SANCTUARY (HUNSUR DIVISION)



#### Conservation problems

- Crop raiding
- Extensive teak plantations
- Reported timber smuggling to Kerala

#### Conservation priorities

- ◆ Effective fire control
- ◆ Intensive patrolling to prevent illegal activities

#### 5. Punjur - Kolipalya corridor (Chamarajnagar Division)

A 1.5 km wide strip of reserved forest between the villages of Punjur and Kolipalya in Chamarajnagar Division (BRT Sanctuary) was traditionally used by over 100-200 elephants moving between the Punjur Range (Chamarajnagar Division) and the Satyamangalam Division (Tamilnadu). During 1990 tribals from the Biligirirangan hills were rehabilitated on this corridor by the forest department, and the forest was cleared for cultivation. This has completely obstructed the movement of elephants along this tract. To the east of Punjur village there is insignificant movement along the steep hill slopes, while to the west of Kolipalya there are other settlements and cultivation. The restoration of this corridor by resettling the tribals on the forest periphery, and providing elephant-proof barriers around the villages of Punjur and Kolipalya is necessary.

Status: Narrow and 1.5 km long

Threat : Chamarajnagar-Sathyamangalam highway passes through the corridor which was disappeared after being used as a site for the relocation of tribals.

#### Conservation problems

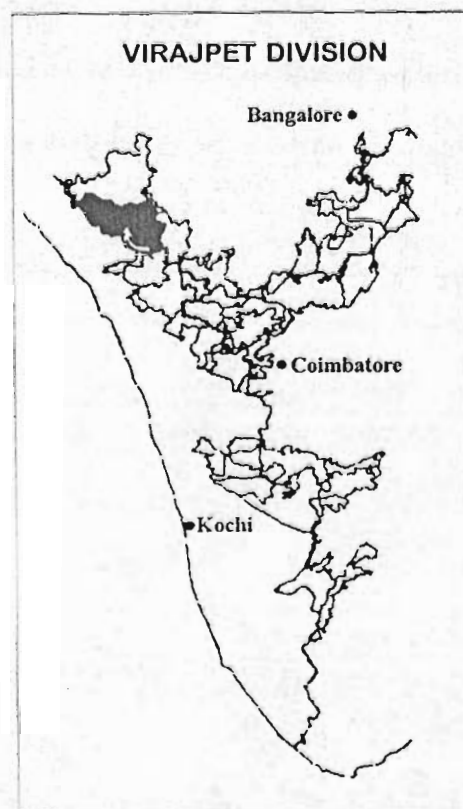
- Elephant-human conflict in several enclaves within the division.
- Frequent fires set by NTFP collectors and cattle grazing have taken their toll on the habitat.

#### Conservation priorities

- ◆ The Kolipalya-Punjur corridor which is in the RF should be restored at the earliest by providing suitable alternative lands to the tribals living there.

#### 6. Talavadi - Mudahalli corridor (Karnataka-Chamarajnagar Division, Tamil Nadu-Sathyamangalam Division)

Elephants going to the small Suvarnavati reservoir often use the corridor between the villages of Talavadi and Mudahalli. This corridor connects the Chamarajnagar (Karnataka) and





Sathyamangalam (Tamil Nadu) Divisions. Survey of the corridor, its strict protection and provision of appropriate barriers in the villages to prevent crop depredation are priority actions.

**Status:** Elephants moving towards Suvarnavati reservoir use this corridor. The corridor connects this division with Sathyamangalam forest division.

**Threat:** Forest department plantation within fenced plots

#### Conservation problems

- Elephant-human conflict in several enclaves within the division.
- Frequent fires set by NTFP collectors and cattle grazing have taken their toll on the habitat.

#### Conservation priorities

- ◆ Removal of plantation fences in the Talavadi-Mudahalli corridor.

### 7. Bakkatur - Arabikere corridor (Chamrajnagar and Kollegal Divisions)

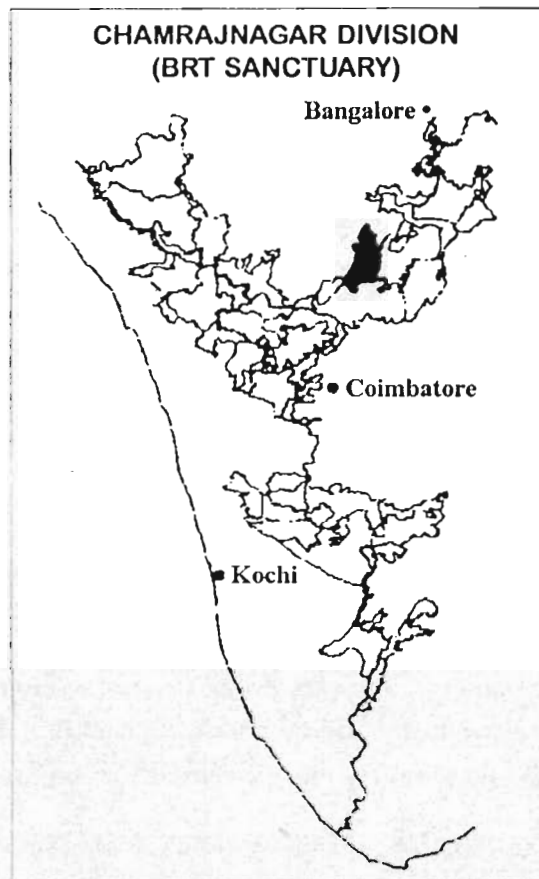
This corridor located in the Chamrajnagar Division, connects the habitats of Chamrajnagar and Kollegal Divisions. The elephant range to the east of the Biligirirangan hills has been divided by a long strip of cultivation, extending from the town of Kollegal, south to the Tibetan settlement at Byloor, a distance of 50 km with the Doddasampige RF (in the BRT Sanctuary) being nearly cut off from the Ramapuram range in Kollegal Division. Only a narrow 1 km corridor now exists between the villages of Bakkatur and Arabikere along the Kollegal - Sathyamangalam highway. Strict protection of this corridor is essential.

**Status:** Narrow and 1 km long

**Threat :** Kollegal-Sathyamangalam highway and human habitation

#### Conservation problems

- Large numbers of cattle resort to the forest for food and water and over grazing is a serious problems.
- Forest fires set by graziers to facilitate the early collection of MFP.
- Wood cutting is prevalent in the reserved forest near Kollegal. The area is subjected to heavy felling and plenty of fuel wood is removed in head-loads by the villagers.





- The demand for bamboo for construction purposes and in the making of thatched huts by the local people and the collection of bamboo by a large number of pilgrims who visit the Madeshwaramalai temple has severely affected the habitat.
- High poaching levels in the past.
- High levels of elephant human conflict on the borders of the division and within enclaves located in RFs.

#### Conservation priorities

- ◆ Improving the quality of habitat, preventing soil erosion and controlling cattle grazing and penning.
- ◆ Increase surveillance of the area to prevent poaching and other illegal activities.

### 8. Sampaje corridor (Madikeri Division)

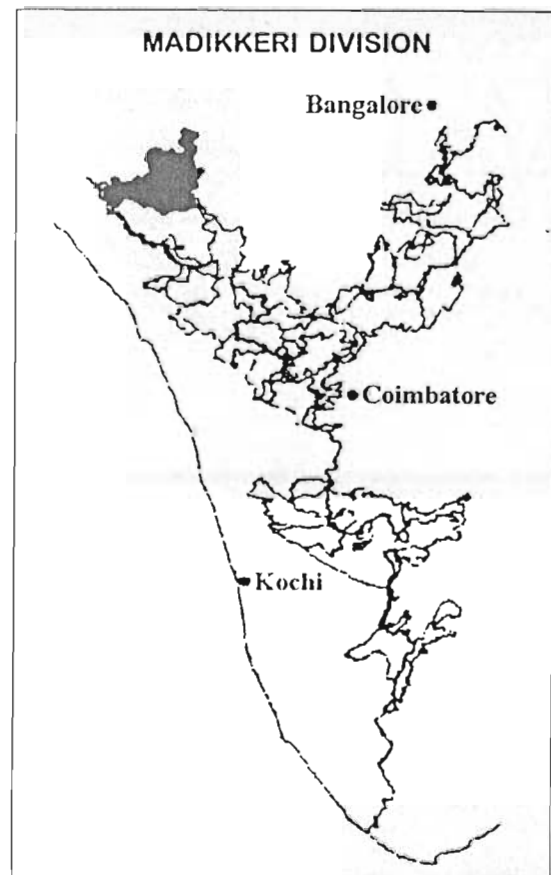
The elephant population in the Brahmagiris extends further north to the Pushpagiris and beyond. The exact distribution and habitat connections have to be determined through surveys. There are several places where habitat contiguity has been or could be broken. One of these is along the Madikeri - Mangalore highway. This highway through the ghats has steep sides for a major part and is flanked by coffee, cardamom, coconut and arecanut plantations. Only a 3 km stretch between the Glencoorg estate and the Sampaje Range Office is used for crossing by elephants. The elephants actually move through the Glencoorg estate to reach the road. A proper survey and protection of this corridor is essential to maintain north-south movement along the Western Ghats.

**Status:** Elephant movement between Pattighat and Kadamakkal RFs is hampered by the state highway where the corridor exists about 3-8 kms east of Sampaje.

**Threat:** Encroachment, clearing and cultivation in the forest. Traffic also poses a major hazard to the habitat. The highway has very steep sides for considerable distance and is flanked by cultivated areas.

### 9. Nanjarayapatna corridor (Madikeri Division)

The Cauvery river defines the western edge of Dubare RF (45 km<sup>2</sup>) and separates it from Anekad RF (30 km<sup>2</sup>) situated about 0.5 to 3.5 km further



west. The area between the river and Anekad R.F. is completely cultivated with paddy, coffee, coconut and other crops, restricting free movement of elephants between the two forests. There is no contiguity between the forests at any point. However, Dubare and Anekad adjoin other forests to their south and north respectively. Movement of elephants between the two forest patches is widespread and regular, increasing in frequency during the paddy growing season. Almost all the crossing occurs after dark as the region is well populated by humans.

**Status:** River Cauvery defines the northern edge of Dubare RF, separating it from Anekad RF. There is regular movement of elephants between the two forests, only during the night.

**Threat :** The area between the river and Anekad RF is completely cultivated with paddy, coffee, coconut and other crops.

**Conservation problems (For Sampaji & Nanjarayapatna corridors)**

- This is one of the most fragmented divisions among all the reserves.
- Coffee, paddy and banana plantations occur within the division perpetuating high levels of elephant-human conflict.
- Settlements in Bhagamandala, Stop the movement of elephants from Brahmagiris.
- Road connecting Madikeri and Mangalore obstructs elephant movement.
- Irrigation dams Chikklihole and Harangi have extensive and deep flume channels which block the movement of elephants across the reserve forest.
- In the Katepura RF there is a small isolated population of elephants which results in serious conflict.
- Illegal encroachment of forest land and illicit felling.

**Conservation priorities (For Sampaji & Nanjarayapatna corridors)**

- ◆ Reduction of timber extraction by the Forest Department and controlling illicit felling.
- ◆ Removal of problem elephants in Katepura and blocking entry of other elephants into the area.

## TAMIL NADU

### 1. Chattiramdoddi-Hunsanhalli corridor (Karnataka-Bangalore Division, Tamil Nadu- Hosur Division)

The Bannerghatta National Park, parts of Bangalore Division in the Kanakapura Range and the northern part of Hosur Division (Thalli RF) are at present practically cut off from the Cauvery Sanctuary and southern part of Hosur Division through intrusion of cultivation between Chaffiramdoddi and Hunsanhalli villages. Elephants move through cultivated fields and small patches of jungle between these two regions. If the northern portion comprising Bannerghatta National Park and adjacent ranges has to maintain its viability as elephant habitat, it is essential to maintain a forested corridor in this region. Some acquisition of land may be needed to establish this corridor. A proper survey to explore the feasibility of this corridor is needed.

**Status:** 1.5 km wide and 2 kms long with highly degraded habitat.

**Threat:** Belakerri and Basavanapuram villages nearby causes severe disturbance to the corridor

### 2. Kempatahalli Corridor (Hosur and Dharmapuri districts)

**Status:** Less than a km long connecting Thalli RF and Javalagiri RF

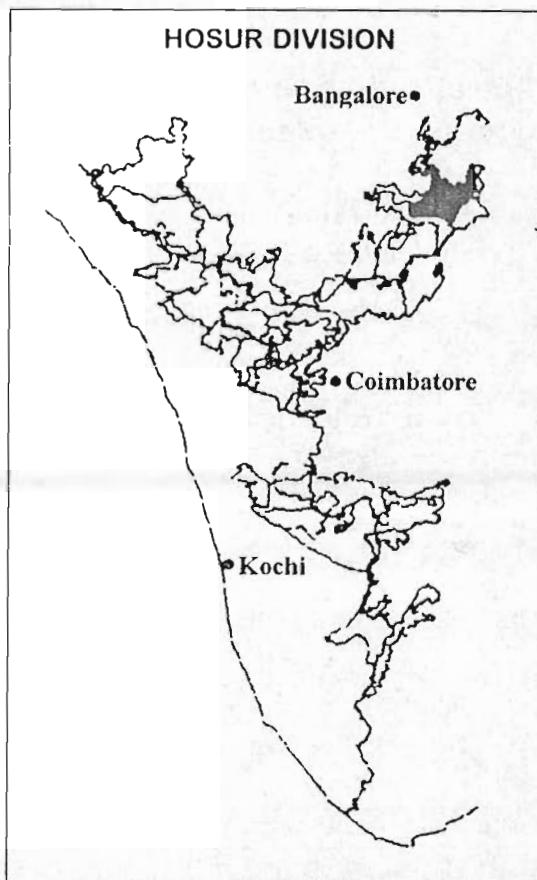
**Threat:** Human habitation on the north and southwest of the corridor.

**Conservation problems (For Chattiramdoddi & Kempatahalli corridors)**

- Habitat fragmentation due to settlements.
- Fuel wood collection, cattle grazing, livestock penning and illegal felling.
- Forest fire.
- Increased biotic pressure due to industrial expansion around the division.
- Cattle competing with elephants for water and the usage of water by the local livestock dries up the waterholes.

**Conservation priorities (For Chattiramdoddi & Kempatahalli corridors)**

- ◆ The corridors have to be safeguarded. If they are broken the elephants in Kanakapura,





Bennerghata and Kolleal will be isolated.

- ◆ Desilting waterholes to increase the availability of water.
- ◆ The crucial waterholes should be made free from cattle usage.
- ◆ Special consideration should be given in the Working Plan to withhold elephant areas from being exploited for bamboo and leased for NTFP collection.
- ◆ Control the spreading of *Lantana camara* and *Chromolaena odorata* which will help in the regeneration of food species and prevent forest fire.

### 3. Attakati-Upper Aliyar corridor (Roadside) (Indira Gandhi WLS, Anaimalai)

Status: Narrow corridor

Threat : Constant vehicular movement on the Valparai-Pollachi road

### 4. Ayarpadi Waterfall (Roadside) Corridor (Indira Gandhi WLS, Anaimalai)

Status: A very narrow stretch of forest makes up this corridor. Elephants use this during all seasons.

Threat: Constant vehicular movement.

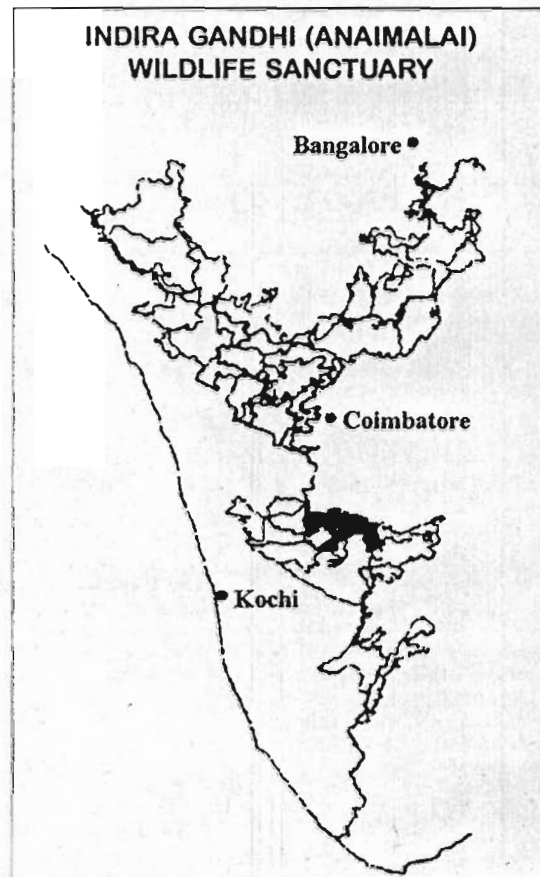
### 5. Siluvaimedu-Kadamparai (Roadside) Corridor (Indira Gandhi WLS, Anaimalai)

Status: Third corridor on the Valparai-Pollachi road. Very rarely used by elephants.

Threat: Constant vehicular movement.

Conservation problems (For Attakati-Upper Aliyar, Ayarpadi Waterfall and Siluvaimedu-Kadamparai corridors)

- All the above 3 corridors are passing through forest roads and hence act as a road side corridor.
- Number of hydroelectric and irrigation projects. The contour canals of the projects act as physical barriers for the movement of elephants.
- The canals between Sirkapathy-Trimurthi reservoir and Sirkapathy-Thunakadavu reservoir are death traps for large mammals.
- Number of coffee, tea and cardamom estates in the middle of the sanctuary.
- Human-elephant conflict in Valparai tea estates.



**Conservation priorities (For Attakati-Upper Aliyar, Ayarpadi Waterfall and Siluvaimeedu-Kadamparai corridors)**

- ◆ Mitigating human-elephant conflict in Valparai.
- ◆ Only hilly regions are free from human disturbance within the sanctuary. To determine the effective habitat available for elephants, the region should be surveyed and habitat availability mapped. •

## **6. Mudumalai-Karian shola-Nilambur Corridor (Gudalur)**

### **Conservation problems**

- Mudumalai-Uper Gudalur-O valley-Mukurti NP and Mudumalai-Karian shola-Devala-Nilambur routes are regularly used by the elephants from Mudumalai. Number of tea estates including several owned by the government's TANTEA and human habitations have fragmented these routes.
- A total of 590 acres of forest land has been regularised in favour of about 5580 encroachers under various Government orders. There is no end to this continuous encroachment. 3000 acres of forest land has been lost to encroachment by 1981.
- Human-elephant conflict is very high in places like Bidharakadu, Karian shola, Devala, Ponnur and Marapalam.

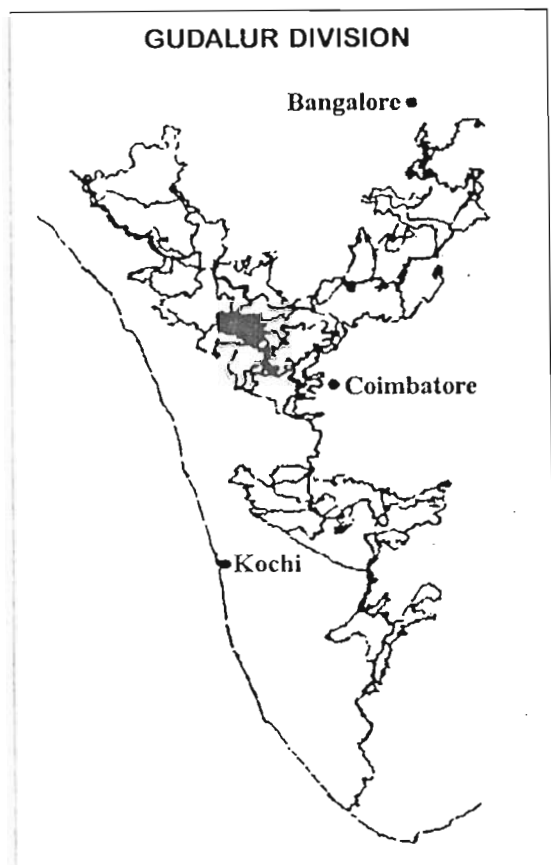
### **Conservation priorities**

- ◆ The eviction of encroachers started and stopped due to a stay order from the Supreme Court of India. The prolonged stay orders since 1981 have not helped in the eviction of the encroachers, which otherwise would have helped in providing a continuous habitat for the migratory elephant population.
- ◆ Demarcation and construction of cairns to protect RFs and boundaries.

## **7. Mavinhalla-Chemmanattham (Mudumalai WLS)**

**Status:** Narrow, connecting Mudumalai WLS and Nilgiri north division

**Threat:** Human habitations and holiday resorts.



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**Conservation problems (For Singara-Masinagudi and Mavinhalla-Chemmanattham corridors)**

- Settlements within and adjoining the sanctuary.
- Cattle grazing problem due to 1000 cattle visiting the sanctuary.
- Forest fire in 50 to 60% of the area and in adjoining reserved forests.
- PUSHEP hydroelectric project.
- Human-elephant conflict.
- Poaching for ivory.

**Conservation priorities (For Singara-Masinagudi and Mavinhalla-Chemmanattham corridors)**

- ◆ Patrolling the interstate boundaries to prevent poaching.
- ◆ Mitigating human-elephant conflict.
- ◆ Monitoring the developmental activities in the corridors, particularly the Singara-Masinagudi corridor.

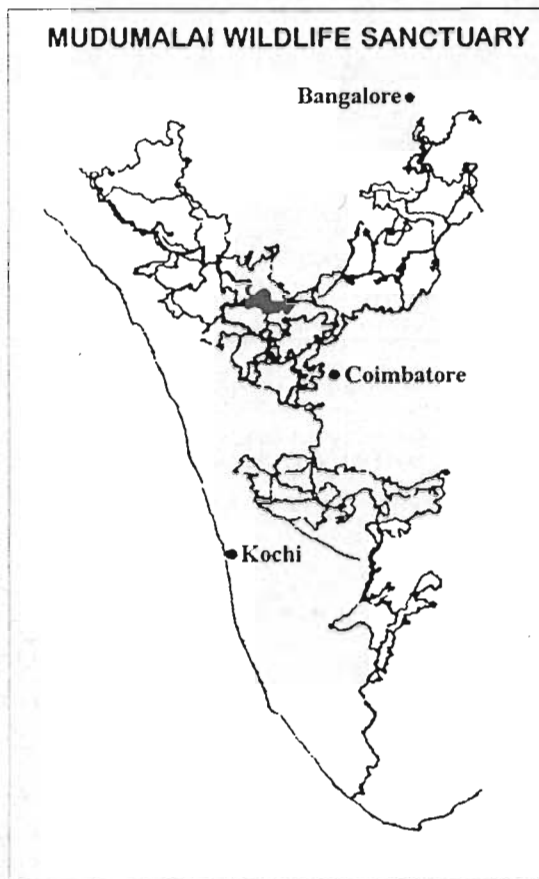
**8. Moyar valley-Eastern Ghats corridor (Nilgiri North and Sathyamangalam)**

The Moyar valley corridor is located at the junction of Eastern Ghats and Western Ghats. This valley corridor beginning at the Thengumarada settlement goes up to Kallampalayam settlement in a flat terrain (m.s.l 350-400m) along the Moyar riparian forests. This stretch has connectivity with Bannari reserve forests of Sathyamangalam Forest Division on the east and Kallar areas of the Coimbatore Central Forest Division on the west. The length of the corridor is 12 km and average width is 3.5 km. Terrain is steeply undulated on either side of the valley (800-1200m) and in many places inaccessible to the Elephants. A sizable population of the Black Buck is found here. The corridor is dominated by southern thorn forests and dry deciduous forest on the slopes. The tree cover is dominated by *Albizia amara*, *Acacia latronum* and *A. leucophloea*. Unpalatable plants such as *Dodonaea viscosa*, *Euphorbia antiquorum* and *Lantana camara* are also widely distributed. *Prosopis juliflora* dominates the tree cover in several locations.

**Status:** : Reserve Forest (Proposed as Sujalkuttai WLS).

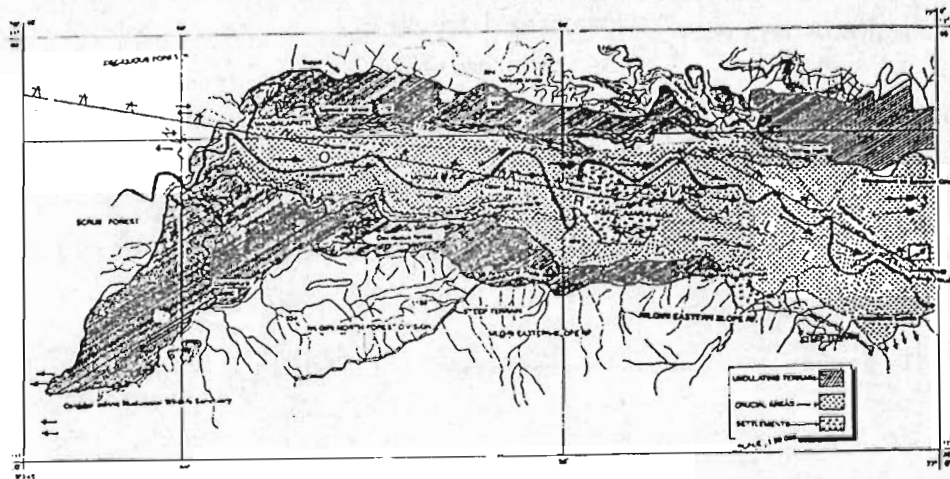
**Connectivity:** Eastern Ghats

**Corridor dependent villages :** 13





### MOYAR VALLEY - EASTERN GHATS CORRIDOR



**Threat:** Proposed road linking Bhavanisagar, Sathyamangalam and Udagamandalam.

#### Conservation problems

- Feral buffaloes
- Weed invasion
- Grazing

#### Conservation priorities

- ◆ Removal of scrub cattle from the corridor.
- ◆ Declaration of Moyar Valley as Protected Area.

### 9. Sujalkuttai-Bannari corridor (Sathyamangalam Division)

This corridor lies in the northern part of Periyar District and is bounded on the north by Karnataka state, on the east and south by Erode Forest Division and in the west by Nilgiri North Forest Division. This corridor begins at the tail end of Moyar valley, linking Bannari beat on the eastern portion and Kallar forest areas of the Coimbatore Central Forest Division on the west. The length of the corridor is 9 km and effective width ranges from 0.5 to 3.0 km. The terrain is undulating except in the lowland adjoining Bhavanisagar dam. Perennial river Moyar and Bhavanisagar reservoir are the major water sources in this region. A sizable number of the Black Buck is found here. The major threats to this corridor are collection of fuel wood and cattle grazing. Tropical thorn forests and dry deciduous forest are the common vegetation types. Tree cover is dominated by *Albizia amara* with signs of over-browsing by the Elephants.

**Status:** Reserve Forest

**Connectivity:** Eastern Ghats

**Threat:** Proposed road linking Bhavanisagar, Sigur, Anaikatti and Udhagamandalam.

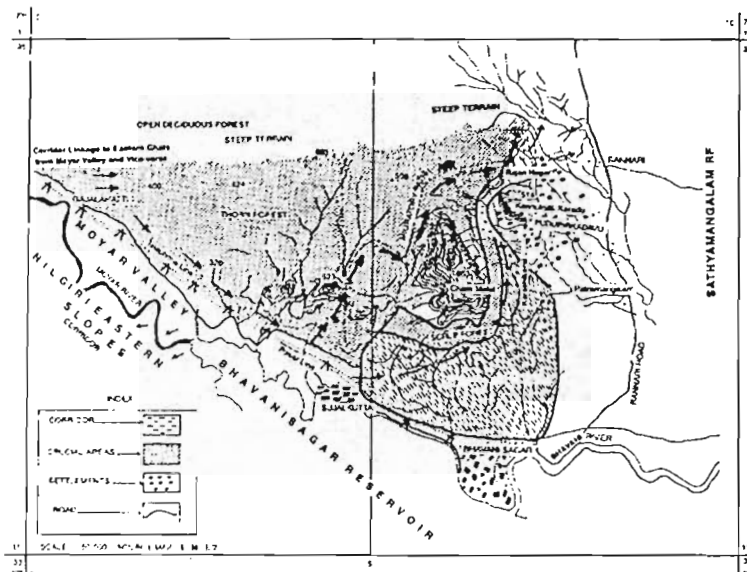
#### Conservation problems

- Grazing
- Fire
- Soil collection
- Poaching
- Lopping

#### Conservation priorities

- ◆ Removal of scrub cattle from the corridor.
- ◆ Declaration of Sujalkuttai-Bannari as Protected Area for Black Buck population.
- ◆ Removal of exotic weeds (*Prosopis juliflora*).

### SUJALKUTTAI-BANNARI CORRIDOR



### 10. Kallampalayam-Uppupallam (Sathyamangalam Division)

It is located at the foot hills of the Nilgiri eastern slopes in the Nilgiri North Forest Division. This corridor is situated between foot hills of Kallampalayam in Moyar Valley and has connectivity to a tribal settlement, Uppupallam on the bank of Bhavanisagar reservoir. This narrow stretch has connectivity to the Eastern Ghats in the east and the Coimbatore Forest Division in the west. The length of the corridor is about 9 km and the width ranges from 0.2 to 4 km. Terrain is flat. The Elephants migrate between this corridor and Coimbatore Forest Division and Eastern Ghats. The occurrence of natural salt licks is a great attraction to the Elephants here. The corridor is being affected by grazing and weed invasion. The common vegetation types are tropical thorn forests and dry deciduous forests. Common plant species found here are *Acacia leucophloea*, *Cordia spp.*, *Commiphora spp.*, and *Ziziphus spp.* Unpalatable plants such as *Euphorbia antiquorum* and *Opuntia dillenii* are widely distributed. *Prosopis juliflora* is the single dominant species in the lowland.

**Status:** Reserve Forest

### KALLAMPALAYAM-UPPUPALLAM CORRIDOR



**Connectivity:** Eastern Ghats and Coimbatore Forest Division

**Conservation problems**

- Grazing
- Fire
- Hunting

**Conservation priorities**

- ◆ Removal of scrub cattle.
- ◆ Removal of exotic weeds (*Prosopis juliflora*).

**11. Kallar-Vedar colony corridor (Coimbatore Division)**

The Kallar-Vedar Colony corridor lies in the Coimbatore Central Forest Division and is surrounded in the north by steep escarpment of the Jaccanari mountains and in the east by crop fields. This corridor has contiguity with the Pillur reserve forests and Attapadi Valley of the Biosphere Reserve. The corridor is smaller between the Forest College, Mettupalayam and Vedar Colony with severe anthropogenic activities causing rapid degradation. The terrain is gently undulating except at Sirumugai Mudakku, Periya Kandi Mokka and other hills in lowlying areas. The length of the corridor is about 5 km and width ranges from 0.5 to 1.5 km. The major threats are livestock grazing, bamboo collection and fuel wood collection. Dry deciduous forests in hill slopes and open scrub forests in lowland areas dominate this corridor.

**Status:** Reserve Forest

**Connectivity:** Coimbatore Forest Division and Eastern Ghats

**Corridor dependent villages :** 6

**Threat:** Agricultural expansion

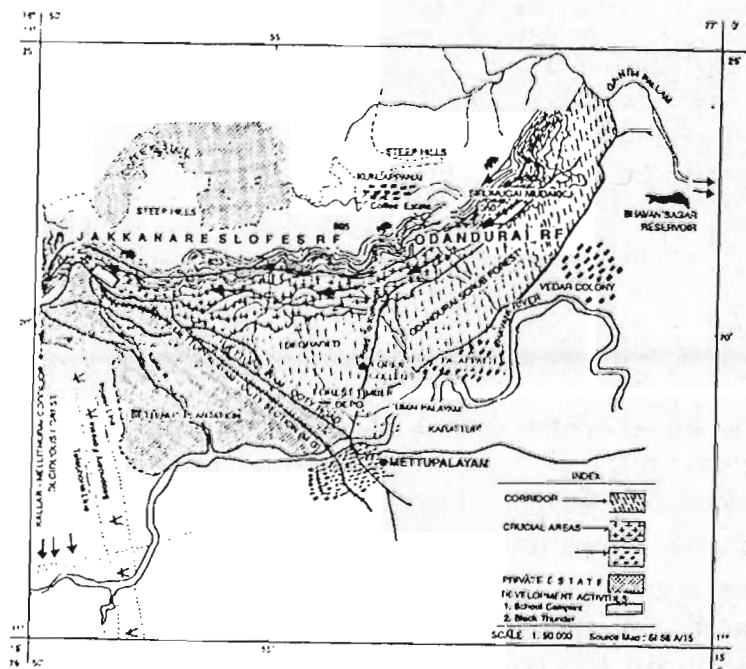
**Conservation problems**

- Grazing
- Fire

**Conservation priorities**

- ◆ Acquisition of private land adjoining the corridor.

**KALLAR-VEDAR COLONY & KALLAR-JACCANARI CORRIDOR**





## 12. Kallar-Jaccanari corridor (Coimbatore Division)

The Kallar-Jaccanari corridor lies in the Coimbatore Central Forest Division and is surrounded in the north by steep escarpment of the Jaccanari mountains and in the east by crop fields. This long strip of corridor beginning at Kothagiri road goes up to Kallar reserve forests along the foot hills of Jaccanari mountains bisecting the Mettupalayam-Connoor highway. The corridor between Kallar and Jaccanari is narrow, due to various development activities. The terrain is undulating. The length of the corridor is 5 km and width ranges from 0.5 to 1.5 km. The newly established private educational institute (founded by Swami Sachidananda Jothi Niketan) on the periphery of this forest has considerably reduced the width of the corridor. Currently elephants are moving through the corridor to cross Ooty main highway following undulating contours of the Jaccanari hills in the north. The other threats to this corridor are collection of fuel wood for commercial purposes and cattle grazing. A recently developed amusement park (Black Thunder) would cause disturbances to the movement of the Elephants due to noise. Dry deciduous forests in hill slopes and open scrub forests in lowland areas dominate this corridor.

**Status:** Reserve Forest

**Connectivity:** Coimbatore Forest Division - Pillur RF - Attappady valley - Silant valley NP

**Corridor dependent villages :** 4

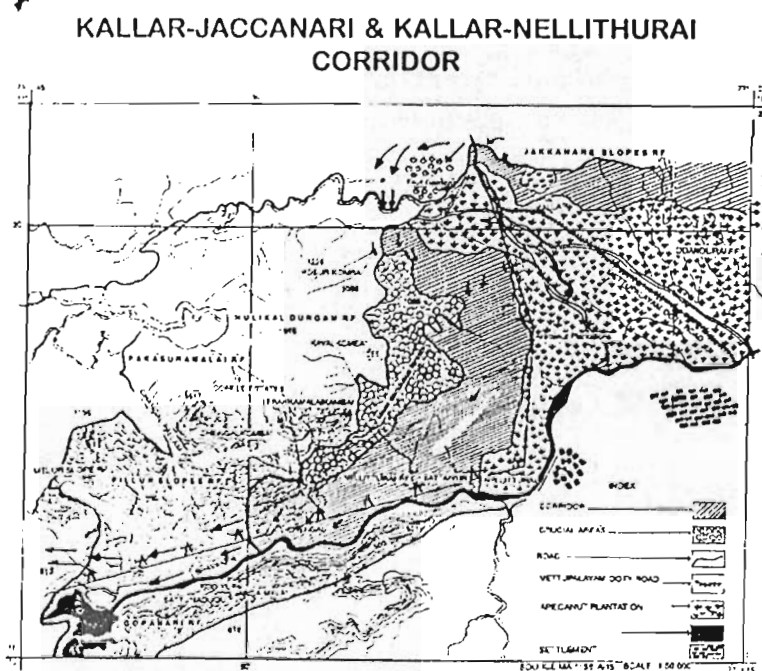
**Threat:** Plantation

**Conservation problems**

- Grazing
- Fire
- Development activities

**Conservation priorities**

- ◆ Massive awareness programme for various stake-holders of the corridor.
- ◆ Acquisition of private lands adjoining the corridor.



## 13. Kallar-Nellithurai corridor (Coimbatore Division)

The Kallar-Nellithurai corridor lies in the Coimbatore Central Forest Division and is bounded in the north by a series of hills namely, Kovalkombai (1055 m), Chengalkombai (1200 m) and Melur slope RF and in the east by settlements (Kallar, Nellithurai, Sattaiyur and Kil Chengal). The corridor beginning at first hairpin bend (behind orchard at Kallar) goes up to Pillur reservoir

along the banks of Bhavani river. It has contiguity with Attapadi Valley and Silent Valley National Park. The length of the corridor is 9 km and width ranges from 0.15 to 3 km. The strong preference of this corridor by the Elephants during their seasonal migration shows its importance. The establishment of a series of electric fencing for protecting crops and expansion of cultivation on the periphery of the corridor hamper the free movement of animals. This activity has considerably reduced the width of the corridor in several places. Of late, elephants are migrating across the corridor by selectively utilising the lowland forests on the banks of Bhavani river. Today, the Kallar-Nellithurai corridor is the major migratory route for animals to move between Pillur RF and Attappady Valley. *Anogeissus latifolia*, *Terminalia* spp., *Pterocarpus marsupium*, *Sapindus emarginatus* and *Tectona grandis* are more confined to hill slopes. The low land forests are dominated by thorny species such as *Toddalia asiatica*, *Limonia alata*, *Atalantia monophylla* and exotic weeds such as *Prosopis juliflora*. The threats to this corridor are collection of fuel wood by the nearby settlements for commercial purposes and, grazing of livestock.

**Status:** Reserve Forest

**Connectivity:** Pillur RF-Attappady valley-Silent valley NP

**Corridor dependent villages :** 4

#### Conservation problems

- Grazing
- Fire
- Wood collection

#### Conservation priorities

- ◆ Acquisition of private land adjoining the corridor.
- ◆ People's participatory programme for corridor dependent stake-holders.

### 14. Moyar-Avarahalla corridor (Mudumalai WLS)

This corridor is located at the north-eastern part of the Mudumalai Wildlife Sanctuary. It is bounded in the north by Moyar road and south west by Sigur reserve forests. The strip of forest between Moyar road and right bank of the Singara flume channel is used by animals to disperse from the Sanctuary to Jayadev avenue and subsequently to Sigur plateau. It is referred to "Moyar-Avarahalla road side corridor". Although this strip of forest is 9 km in length, only the central part of 5 km is effectively used by wild animals. The width varies from 25 to 100 m. The terrain is flat. Singara flume channel is a perennial water source for animals. The common vegetation types are tropical thorn forests and dry deciduous forest. *Lantana camara* dominates the ground vegetation on the road side. Other weed species such as *Dodonaea viscosa*, *Euphorbia antiquorum* and *Opuntia dillenii* are widely distributed and invading the corridor affecting its quality. The proposed Moyar Ultimate Stage Hydro Electric Project (MUSHEP) which envisages widening (2 m) the existing Singara flume channel bordering the Moyar-Avarahalla road side

corridor would affect the connectivity of the existing corridor with the Sigur plateau. An Environmental Impact Assessment of MUSHEP has been done by the Sálím Ali Centre for Ornithology and Natural History. The other threats here are collection of fuel wood, cattle grazing and vehicular traffic particularly during night hours.

**Status:** Reserve Forest

**Connectivity:** Sigur Plateau  
- Moyar Valley

**Corridor dependent villages :** 3

**Threat:** Moyar Ultimate State Hydro Electric Project (MUSHEP)

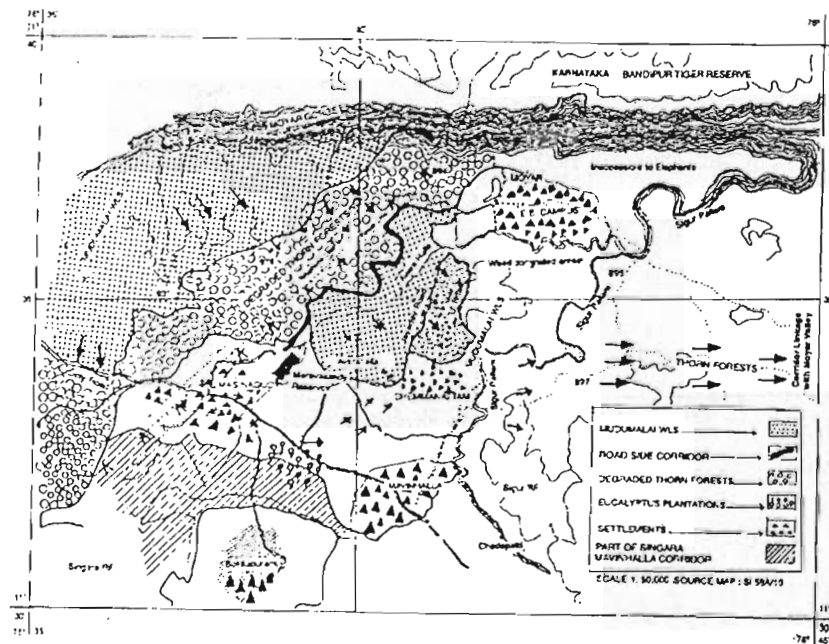
**Conservation problems**

- Grazing
- Fire
- Wood collection
- Vehicular traffic

**Conservation priorities**

- ◆ Ensure greater protection for free movement of elephant population between Mudumalai WLS, Sigur, Anaikatti and Moyar valley corridor.

#### MOYAR-AVARHALLA CORRIDOR



#### 15. Singara-Mavinhalla corridor (Nilgiri north)

This corridor is located at the southern part of the Mudumalai Wildlife Sanctuary. The corridor encompassing Singara private estates and reserve forests of the Nilgiri North Forest Division is crucial for animals to disperse between the Sanctuary and Nilgiri North Forest Division.. The length of the corridor is 8 km, the average width is 2 km. In many places the corridor is open due to severe biotic pressure. Singara flume channel is the perennial water source for animals. The predominant vegetation types are tropical mixed deciduous in the plain and open thorn forests and dry deciduous forest in hill slopes. Weed species such as *Stachytarpheta indica*, *Dodonaea viscosa*, *Euphorbia antiquorum* and *Opuntia dillenii* are widely distributed and are invading the corridor affecting the quality of the corridor. The major threats to the corridor are collection of wood, grazing and vehicular traffic particularly during night hours.

**Status:** Protected Area, Reserve Forest and private forests

**Connectivity:** Sigur - Moyar Valley



Corridor dependent villages : 4

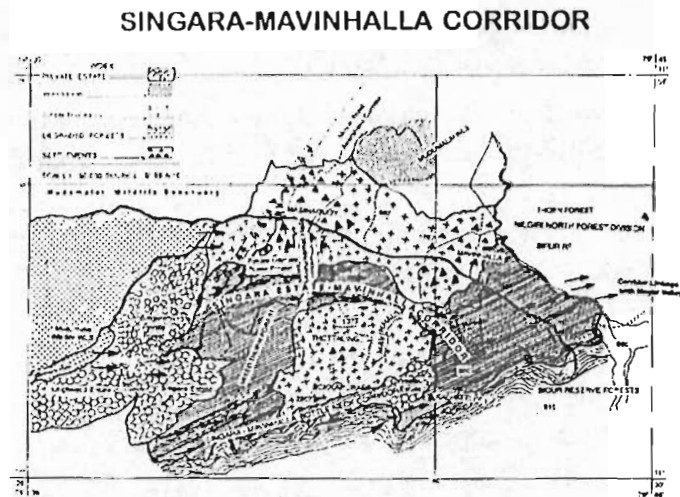
Threat: Coffee estate and resorts

#### Conservation problems

- Grazing
- Fire
- Wood collection

#### Conservation priorities

- ◆ Acquisition of Singara private estate.



### 16. North Palanis corridor (Dindigul Division)

Connecting the Anaimalais with the northern slopes of the Palnis. Located from the Anaimalai WLS through Amaravathi Reserve Forest, into the Palnis. Elephants are found below 1000 m in the Kudiraiyar, Pachayar and Pallangi Valleys up to the Pallar valley where there is a permanent population. The approximate area is 250 sq. km. This is dry deciduous forest interspersed with riparian forest in the valleys. In the Pallar valley there is moist deciduous forest, from the foothills up. In the north there is cultivation on marginal lands right up to the RF boundary. In the south steep cliffs separate it from the upper Palnis. Most access routes to the upper Palnis are blocked because of settlements and agriculture, with the exception of Kukkal.

Status: Used by elephants today!

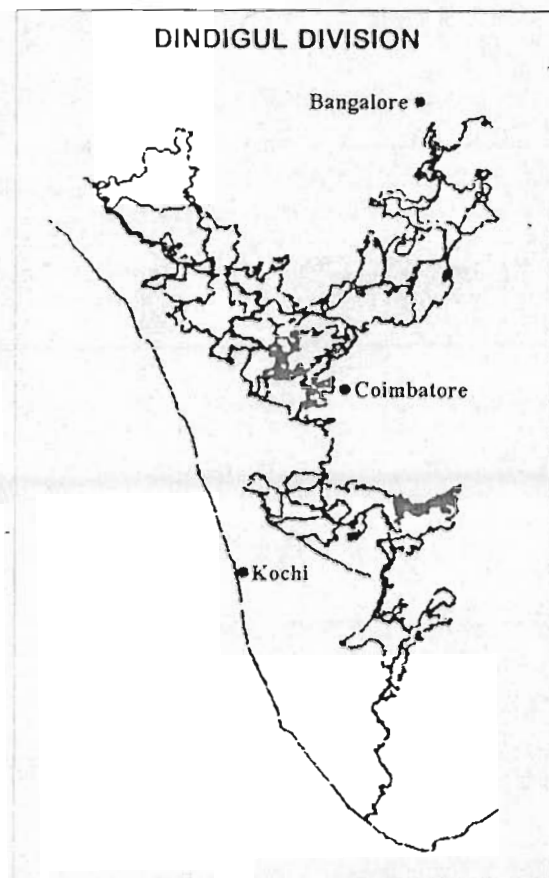
Threats: Human-elephant conflicts (Moderate to Severe)

#### Conservation problems

- Grazing; moderate to severe in all areas
- Fires moderate in Kudiraiyar and Palar
- Commercial forestry in Pallangi
- Poaching severe at Pallangi, moderate elsewhere

#### Conservation priorities

- ◆ Management techniques to control above threats
- ◆ Prevent poaching
- ◆ Suggestion for electric fencing



## **17. High Range corridor (Dindigul Division)**

Connecting the Anaimalais to the southern part of the Palnis, and to the Cardamom hills. It is located between Eravikulam NP and Top Station of the Palnis. The northern part connects to the Northern Palnis corridor and the southern and connects to the South Palni corridor. It is surrounded by tea estates, with a few patches of degraded shola interspersed. The length of the corridor is about 70 km.

**Status:** Used very frequently by elephants

**Threat:** Human-elephant conflicts, Ganja cultivation in elephant resources affecting the elephant habitats.

### **Conservation problems**

- Development of tourism

### **Conservation priorities**

- ◆ A study to evolve management recommendations to reduce damage to tea is required.
- ◆ The High Range Wildlife and Environment Preservation Association is the appropriate organisation to coordinate this study.

## **18. South Palnis corridor (Dindigul Division)**

Connecting the Top Station area with the Upper Palnis. It is located between Top Station area and Pambadam shola through Vandaravu and Mariyan shola upto Berijam and Mathikettan shola, 23 km from Kodaikanal. Grassland shola ecosystem largely replaced by plantations of pine, eucalyptus and wattle throughout the area. Some small shola patches in places, the biggest being Mathikettan (1000 ha) and Kukkal (300 ha). Towards the south of the corridor there are steep cliffs with some patches of grassland. In the north there are agricultural settlements. Potato and vegetable farms exist at Kukkal and Thulakanpatti.

**Status:** Elephants have only recently started coming up to Berijam and are occasional visitors there. The main area in use connecting to the corridor is the Thulukanpatti-Vandaravu area.

**Threats:** Human-elephant conflicts and development of plantation.

### **Conservation problems**

- Severe grazing at Kukkal and Tulukanpatti, moderate elsewhere
- Fires occurs with moderate frequently at all site with the possible exception of Kukkal
- Severe poaching at Top Station, moderate elsewhere.
- Expansion of settlement at Kukkal.

### Conservation priorities

- ◆ Links to North Palnis corridor through Kukkal, is top conservation priority.
- ◆ Strict enforcement against poaching.
- ◆ Change in coupe activity pattern to have concentrated working in some areas rather than scattered all over the area in the short term.
- ◆ Phasing out of commercial plantation in the long term.

### 19. Cardamom hills corridor (Dindigul Division)

Connecting the Palnis with Periyar. It starts from Tulukanpatty in the Upper Palnis and goes south to the west of the Anairangal reservoir on top of the cliff edge on the Kerala side until level with Thevaram in Tamil Nadu where it descends down the cliff to Thevaram. It then proceeds along the foothills to 5 km from Kumily, and then goes up to Kumily. The landuse pattern includes agricultural lands between Thevaram and Periyar lower camp. Patches of cardamom plantation on the ridges.

**Status:** The corridor is broken between Thevaram to about 5 km north of Kumily about 30 years ago. Elephants move along the Palnis into the Cardamom hills, and moves eastwards into Tamil Nadu from above Thevaram.

**Threats:** Human-elephant conflict exist.

### Conservation problems

- Continuing encroachment and expansion of human settlements in the Cardamom hills.
- Mathikettan shola and Pambadam shola in Kerala under heavy threat of encroachment, mainly for illicit cultivation of *Cannabis*.

### Conservation priorities

- ◆ 75 sq. km. crucial elephant migratory route between Thevaram and Kumily may be taken for ecorestoration programme. Economic uplift programme for the forest resource users may be taken up on a priority basis.
- ◆ The possibility of resuming the cardamom leases to the east of the Kumily-Devikulam road up to 25 km north of Kumily needs to be explored. This would create an alternate route to the one proposed for the plains.

*Corridors 16-19, located in the Dindigul Division was documented by Ali (unpublished report). These elephant corridors connecting other wildlife reserves such as Anaimalais, Kodaikanal and Eravikulam National Park. It is necessary to investigate to document and identify crucial, bottleneck corridors in order to design conservation units for elephant reserves in south of Palghat gap. This information need to be taken on a priority basis, considering the biotic pressure and development threats as reported by Ali (unpublished report).*





## **20. Shencottah corridor (Mundanthurai-Kalakkad Tiger Reserve)**

Connecting the Periyar-Megamalai Conservation Units with Agasthyamalai. It locates between Ariankavu and Thenmalai, across the Shencottah gap in the southernmost range of the Western Ghats. The southern side abuts the Courtallam RF and is dominated by teak. The northern side is farmed with rubber, banana, tapioca and cardamom. A road and railway going through Shencottah gap have dense human settlements along them. The approximate length of the corridor is 13 km.

Status: Estimated to have been broken 30-40 years back.

## **21. Periyar Tiger Reserve-Sivagiri-Tirunelveli Forest Division-Deviar-Srivilliputtur Wildlife Division**

## **22. Periyar Tiger Reserve-Deviar Estate-Srivilliputtur Wildlife Division**

## **23. Periyar Tiger Reserve-Megamalai RF-Kambathu Perumal-Ayyanarkoil-Srivilliputtur Wildlife Division**

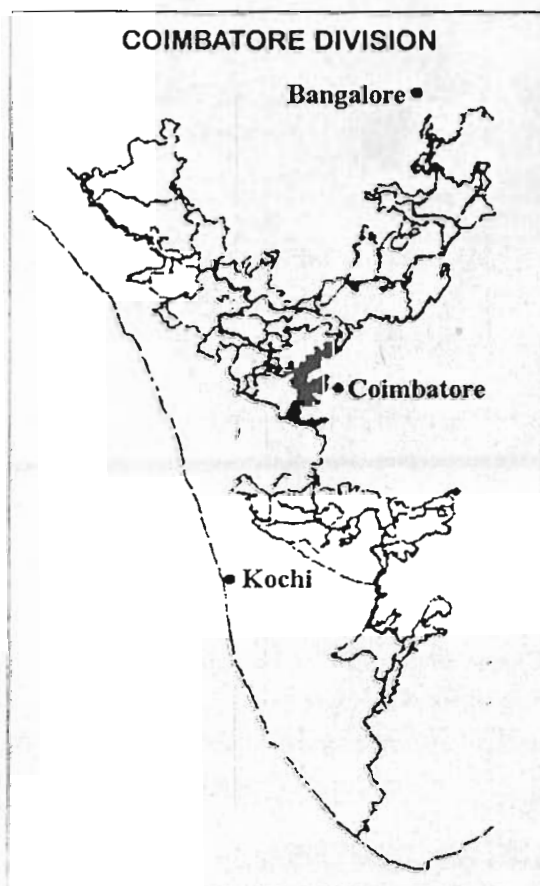
## **24. Megamalai RF-Varushanadu-Srivilliputtur RF-Pilavakkal Dam**

## **25. Pilavakkal-Kovilar Dam-Kottamalai Valley**

*Corridors 21-25, connecting a few elephant reserves namely, Periyar Tiger Reserve, and Megamalai Wildlife Sanctuary. Although these corridors are less important in terms of habitat quality, their connectivity to other major wildlife reserves, need to be preserved for the long term conservation of elephants in this region.*

## **26. Kunjapanai (Coimbatore Division)**

Kunjapanai is located about half way between Kotagiri and Mettupalayam at an elevation of 1200 m above mls. It is on the Mettupalayam ghat road. The plateau at this end, begins or terminates at Kunjapanai, depending up on how one looks at it and the ghat road begins its descent. The Jackanari slopes Reserved Forest which goes all the way down and some distance into the plains starts at





Kunjapanai. The plantation country slopes here. Elephants, mostly solitary or small parties frequent this area, particularly during the jack fruit season. Elephants come to this area from the forests below the plantations and from the forests east of the road. They cross the road above and below Kunjapanai. This does not happen frequently; when they do it is usually very late in the night. Below Kunjapanai it is a steep slope where the road cuttings have made it difficult for elephants to move from one side of the road to the other.

**Status:** The corridor is broken between Kothagiri and Jackanari mountains in Mettupalayam range of Coimbatore Forest Division.

## KERALA

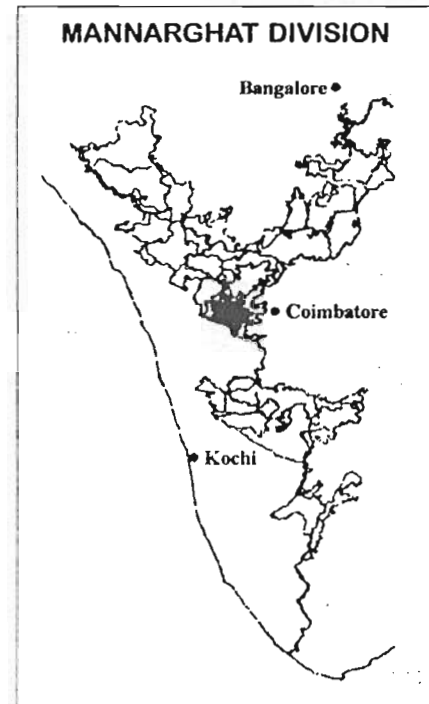
### 1. Mannarghat-Mukali Ghat road corridor (Mannarghat division)

#### Conservation problems

- Encroachment causing high levels of fragmentation in Attappadi
- Dense settlement along the road from Mukkali to Anaikatti
- Human-elephant conflict.

#### Conservation priorities

- ◆ The proposal of acquiring 120 ha of land in Mandanmutti adjoining Silent Valley NP should be considered.
- ◆ Acquisition of private lands blocking elephant movement.



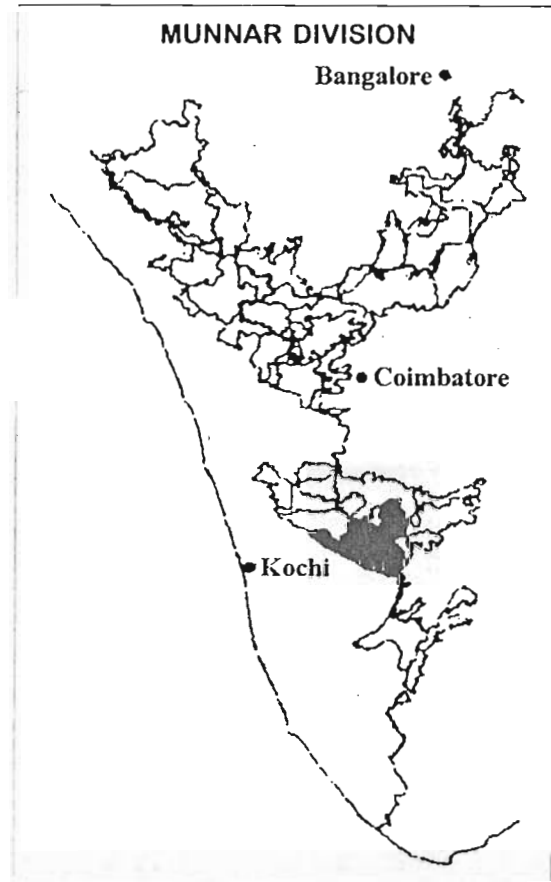
### 2. Mattupatti Corridor (Munnar division)

**Status:** Elephants from this division use the corridor to visit north of Theni forest division (Bodinayakannur range)

**Threat :** Human habitations and tea estates.

#### Conservation problems

- Leasing of large areas of forest lands for tea plantations has fragmented the habitat.
- Illegal felling and encroachment are serious problems in Mathikettan shola region. Legal complications involving the Forest Department and the Revenue Department have become a major impediment in protecting the area.
- Large-scale marijuana cultivation.
- The cattle owned by non-tribals is given to the tribals for grazing in the forest for a meagre amount.
- Many tribal settlements either in the fringes or outside the forest. The tribals entirely depend on the forests for fuel wood.



- Major portion of Devikulam range has eucalyptus plantations.
- The natural evergreen forest is highly fragmented due to cardamom and tea estates, and Anaiyarangal reservoir.

#### **Conservation priorities**

- ◆ Mattupatti tea division is a major elephant migratory path and this route should not be disturbed.
- ◆ Increased patrolling in leased cardamom estates (particularly on the Kerala side, Mathikettan shola), to prevent threat to the elephant habitat and movement, is essential.

### **3. Periya corridor (Wynad North Division)**

In the Wynad North division, a narrow corridor connects the Kottiyur RF with the Kannothe RF within the Periya range. This corridor cuts the Mananthavadi-Tellicherry road (north) and is essentially a strip of jungle less than 100 m wide. The corridor has semi-evergreen vegetation and is not under great pressure. The terrain in other areas where the forest reaches both sides of the road precludes crossing.

**Status:** The corridor cuts the Mananthavadi-Tellicherry road, and is less than 100 m wide

**Threat:** The terrain where the forest reaches both the sides of the road has a number of human habitations which precludes the movement of animals.

#### **Conservation problems**

- Contiguity of Tholpetty and part of Brahmagiri with Kuttiadi region of Wynad north is lost due to encroachment along the Kuttiadi - Mananthavadi road.
- Developmental programmes and encroachment have led to the degradation of forest in the lower areas and a large extent of the vested forest has been planted with eucalyptus.
- Wood-based industries located in and around the division.
- Human settlements within and adjoining the reserve forests and illegal wood cutting.
- 30% of the area subjected to fire annually.
- Human-elephant conflict.

#### **Conservation priorities**

- ◆ Establishment of contiguous and undisturbed habitats is the most important requirement for long-term conservation of the elephant.

### **4. Pakranthalam corridor (Wayanad North Division)**

This is another narrow corridor located in Wayanad North Division, connecting the northern and southern portions of the Periya Reserved Forest along the Mananthavadi-Kuttayadi-Tellicherry road (south) at Pakranthalam. Highly degraded scrub-jungle characterizes this corridor, which is once again situated on a steep ghat road. The lower reaches of this corridor

actually pass through fallow estate land.

**Status:** Cuts the Mananthavadi-Kuttayadi-Tellicherry road. Situated on the steep ghat road in the lower reaches.

**Threat :** The corridor passes through fallow estate land.

#### Conservation problems

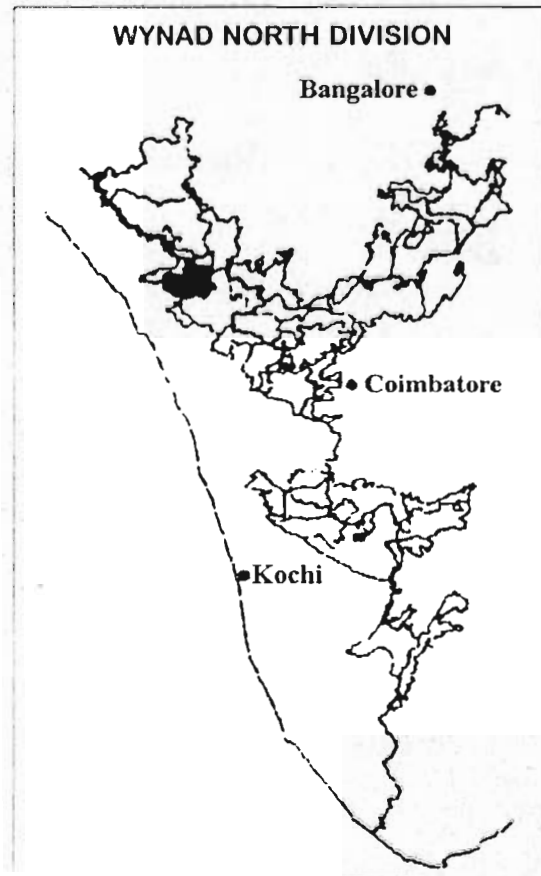
- Contiguity of Tholpetty and part of Brahmagiri with Kuttiadi region of Wynad north is lost due to encroachment along the Kuttiadi - Mananthavadi road.
- Developmental programmes and encroachment have led to the degradation of forest in the lower areas and a large extent of the vested forest has been planted with eucalyptus.
- Wood-based industries located in and around the division.
- Human settlements within and adjoining the reserve forests and illegal wood cutting.
- 30% of the area subjected to fire annually.
- Human-elephant conflict.

#### Conservation priorities

- ◆ Establishment of contiguous and undisturbed habitats is the most important requirement for long-term conservation of the elephant.

### 5. Brahmagiri - Tirunelli corridor (Karnataka-Brahmagiri Sanctuary, Kerala-Wynad North Division)

The elephant populations in the Western Ghats of northern Karnataka along the Brahmagiris are connected to those in the Coorg plateau only through the northern Wynad region of Kerala. The southern tip of the Brahmagiris extends into Kerala's Wynad North Division, where the Tirunelli Reserved Forest and Kudrakote Reserved Forest provide a narrow connection eastward to the Tholpatty range of Wynad Sanctuary. There are eucalyptus and teak plantations in this corridor and also some settlements (Edayurvayal and Panayankolli). This is an extremely important corridor to maintain habitat contiguity for elephant populations in the Western Ghats, and should be accorded very high priority. Resettlement of villages should be carried out and strict protection against habitat degradation ensured.





**Status:** Narrow corridor located near N. Begur, connecting Tirunelli and Kudrakote RFs.

**Threat:** Human habitation, teak plantation and timber extraction.

#### **Conservation problems**

- Contiguity of Tholpetty and part of Brahmagiri with Kuttiadi region of Wynad north is lost due to encroachment along the Kuttiadi - Mananthavadi road.
- Developmental programmes and encroachment have led to the degradation of forest in the lower areas and a large extent of the vested forest has been planted with eucalyptus.
- Wood-based industries located in and around the division.
- Human settlements within and adjoining the reserve forests and illegal wood cutting.
- 30% of the area subjected to fire annually.
- Human-elephant conflict.

#### **Conservation priorities**

- ◆ Establishment of contiguous and undisturbed habitats is the most important requirement for long-term conservation of the elephant.
- ◆ Creating contiguous habitat at Pakranthalam, between Tholpetty, Brahmagiri and part of Kuttiadi region

### **6. Chiambam Corridor (Wynad south)**

**Status:** Situated in the Chedleth range connecting Wynad WLS and the division.

**Threat :** Human habitation and cultivation

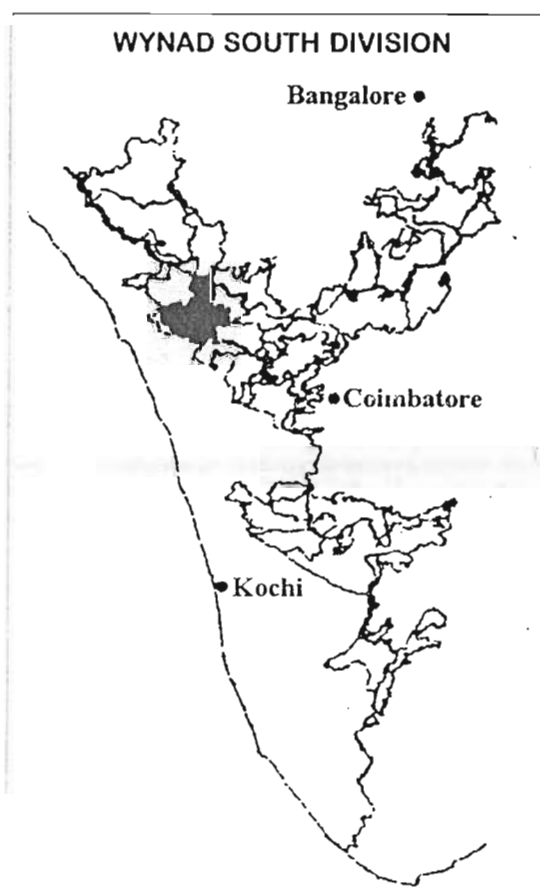
### **7. Kakkeri-Panikal Corridor (Wynad south)**

**Status:** The corridor facilitates the movement of elephants from Padri RF to Kartikulam and Alathur RFs.

**Threat:** Large-scale cultivation and human habitation.

#### **Conservation problems (For Chiambam and Kakkeri-Panikal corridors)**

- Wood cutting, forest fire and cattle grazing have degraded the habitat.
- There are 39 human settlements within the division. Crop raiding and human death due to elephants reported in these areas.



- Developmental programmes and encroachment lead to the degradation of forest in the lower areas and a large extent of the vested forest has been planted with eucalyptus.
- Legal procedures pertaining to the vested forests in Mepadi region is a real threat to the conservation programme. Cattle grazing, exploitation of bamboo for industries and fire have devastated the undergrowth.

#### **Conservation priorities (For Chiambam and Kakkeri-Panikal corridors)**

- ◆ Establishment of contiguous and undisturbed habitats is the most important requirement for long-term conservation of the elephant. Priority should be given for the proposal to include Chedleth range of this division into Wynad WLS.
- ◆ The termination of non-tribal settlement leases would improve the quality of the habitat.
- ◆ Protecting the crops by elephant barriers in Chedleth range and speedy redressal of the grievances through immediate payment of compensation has to be ensured.

#### **8. Pallivayal-Tattur corridor (Wynad Wildlife Sanctuary)**

This corridor connects Kuppadi RF with Kurichiat RF of the Kurichiat range of Wynad Sanctuary. It is 2 km wide, with plantation (mainly pepper and banana) along the edge. Most of these plantations are protected from elephants using electric fences. There is a proposal to construct a road through this crucial corridor, which runs from Sultan's Battery to Pallivayal. Once this road comes into use, the connection between Kuppadi and Kurichiat would be lost.

**Status:** 2 kms long with pepper and banana plantations along the edge.

**Threat :** Fences erected to protect the plantations from wildlife

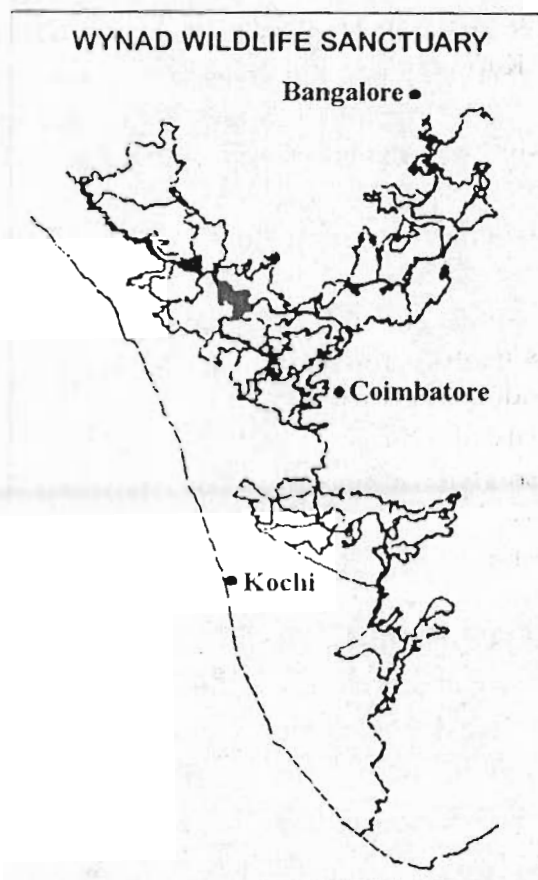
#### **9. Faith-Narikal-Huvinakadavu estates Corridor (Wynad Wildlife Sanctuary)**

**Status:** Connects Brahmagiri, Nagarhole, Wynad WLS and Virajpet forest divisions through a number of coffee and cardamom estates.

**Threat:** Human habitations and subsequent human-elephant conflict.

#### **Conservation problems (For Pallivayal-Thattur and Faith-Narikal-Huvinakadavu estates Corridors)**

- 89 human settlements and associated roads and paths within the sanctuary resulting in



human activity throughout the year. Exploitation of flowered bamboo and eucalyptus for industrial purposes. All this has resulted in severe human-elephant conflict.

- A major town which is 50 m away from the sanctuary boundary.
- Forest contiguity of Kurchiat and Muthanga ranges with Wynad south division and Chedeled range is lost due to encroachment in Pulpally forest.
- Conversion of deciduous forests into plantations, which has resulted in animals entering the settlements for crop raiding.
- Contiguity of forests in Tholpetty and Brahmagiri with Muthanga and Kurichiat is lost due to encroachments all along the Kabini river. The area is protected through live-wire fencing all along.
- Forest fire and cattle grazing and the subsequent degradation of the forests surrounding the villages.
- Water scarcity during the dry season due to the conversion of water logged swamps into cultivated areas.

#### **Conservation priorities (For Pallivayal-Thattur and Faith-Narikal-Huvinakadavu estates Corridors)**

- ◆ The scattered settlements within the sanctuary should be brought together on the fringes. This may not disrupt their traditional life styles.
- ◆ The sanctuary exists in two fragments. Rehabilitation of people from the sides of the Kabini would create continuity between the two areas.
- ◆ Monitoring of the elephant population would help in assessing the pressure on the habitat.
- ◆ Care has to be taken to avoid disturbance to the Pallivayal-Thattur corridor as it connects Kuppady and Kurichiat Reserves.
- ◆ A socio-economic survey of settlers to be undertaken to assess their dependence on the forest resources and to understand their needs better.

## **CONCLUSION**

This report would provide a compilation of information on the status of selected elephant corridors in Southern India. Information pertaining to description, use pattern by elephants, threats, and conservation priorities for these corridors would help the managers in taking up conservation programme in a phased manner. Such approach would indirectly help elephant reserves to maintain the integrity of habitats. Though, this report has focussed only on selected forest divisions on which data were available, it is necessary for the managers to update this compilation after surveys as well as ecological investigations. We believe that this workshop is also an opportunity to develop a conceptual framework for the long-term conservation of elephant corridors in Southern India.