

SOUTHERN INDIA PROJECT ELEPHANT EVALUATION REPORT

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CHAPTER - I

PROJECT ELEPHANT GENERAL - SOUTHERN INDIA

A. Objectives of the scheme:

Project Elephant was launched in February 1992 with the following major objectives:

1. To ensure long-term survival of the identified large elephant populations; the first phase target, to protect habitats and existing ranges.
2. Link up fragmented portions of the habitat by establishing corridors or protecting existing corridors under threat.
3. Improve habitat quality through ecosystem restoration and range protection and
4. Attend to socio-economic problems of the fringe populations including animal-human conflicts.

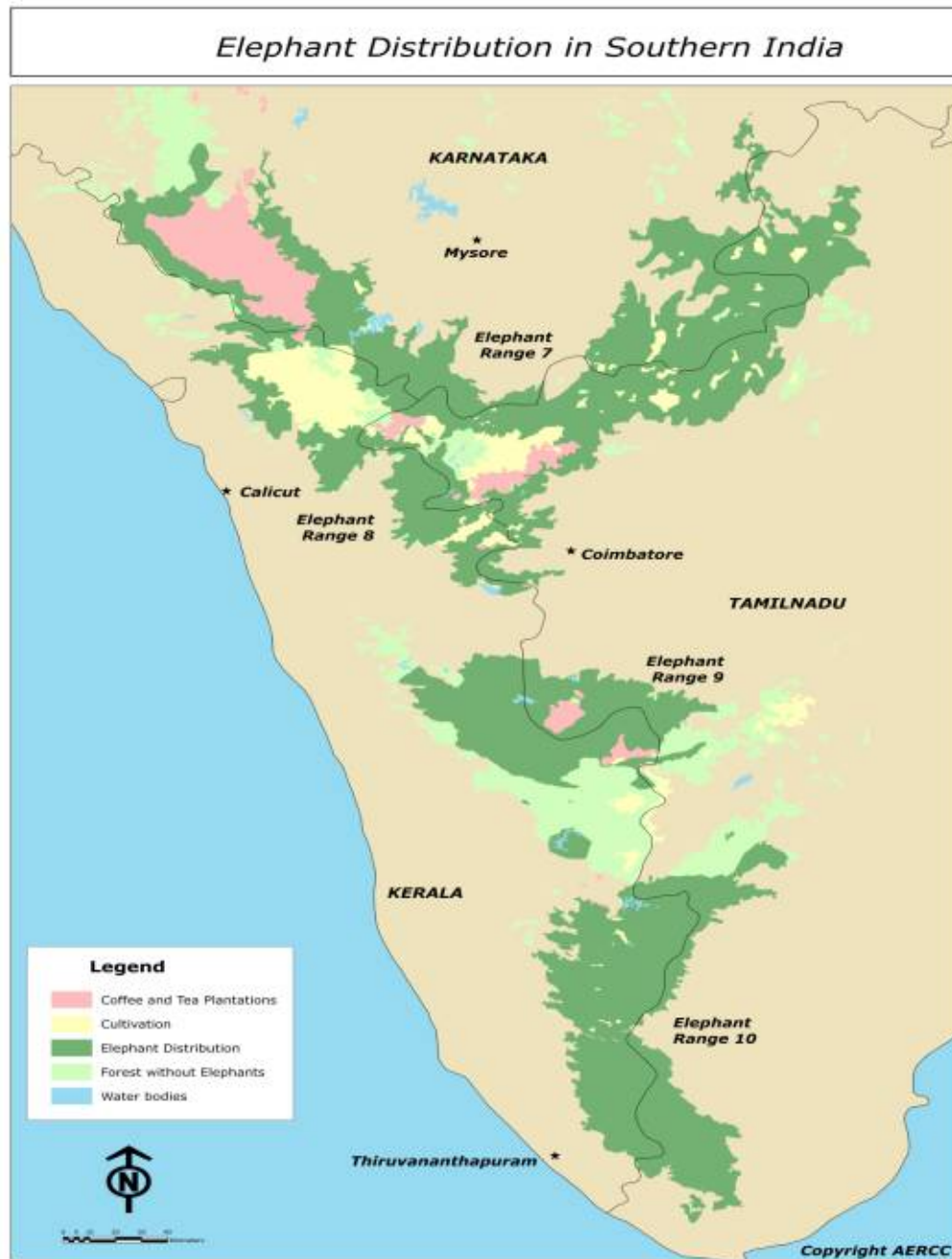
Eleven viable elephant habitats (now designated Project Elephant Ranges) were identified across the country. The estimated wild population of elephants is 30,000+ in the country, of which a significant proportion is found within the PE Ranges.

The four southern states of Tamil Nadu, Karnataka and Kerala hold approximately 15000 elephants. The conservation of the elephants in this region is managed through four Project Elephant Ranges (interstate), each of which have multiple Elephant Reserves (intrastate) as under:

Table 1.1: Details of Elephant Ranges of southern India

Range #	Range name	State Elephant Reserve	State
7	Nilgiris – Eastern Ghats	Mysore ER	Karnataka
		Wayanad ER	Kerala
		Mudumalai ER	Tamil Nadu
		Kaundinya ER	Andhra
8	South – Nilgiri	Nilambur–Silent Valley ER	Kerala
		Coimbatore ER	Tamil Nadu
9	Western Ghats	Anamalai ER	Tamil Nadu
		Parambikulam ER	Kerala
10	Periyar	Periyar ER	Kerala
		Madurai ER	Tamil Nadu

Figure 1.1: Map showing the various forest divisions with elephants in the states of Karnataka, Kerala and Tamil Nadu



The present study comprises the entire region excluding that of Andhra Pradesh. A brief description of the Elephant Ranges is as under:

1. **Nilgiri-Eastern Ghats (Range 7):** The largest range in the south, spread over 13000 km² across a spectrum of forest types from moist deciduous through dry deciduous to dry thorn forest, with limited extent of montane evergreen forest (*shola*) and grassland. It also has extensive teak and *Eucalyptus* plantations. Estimated elephant population is about 6800-9950 (2002 Synchronized Elephant Census).
2. **South-Nilgiri (Range 8):** Lying south of the Nilgiris and spread over 2400 km² across stretches of evergreen forests, montane *shola* forest and grassland, moist deciduous forests and plantation of exotic monoculture. Estimated elephant population is 300-600.
3. **Western Ghats (Range 9):** It covers about 5700 km² of diverse landscape from wet evergreen forests to montane *shola* forests and grasslands, moist and dry deciduous forests, and dry thorn forests. It has extensive teak and coffee plantations. Estimated elephant population is 1500-2700.
4. **Periyar (Range 10):** Spread over 3300 sq km of evergreen forests, moist and dry deciduous forests with monoculture of exotic species. Estimated elephant population is 1500-2500.

B. Organizational set up:

A “Park Director” heads the elephant reserve in the states. In most cases he is assisted by an Assistant Conservator of Forests, and has a set of field level staff viz. Forest Rangers, Deputy Rangers, Foresters, Forest Guards and a host of contract labour force. The normal reporting hierarchy of the Park Director (generally DCF excepting in Tiger Reserves) is through the respective Conservator to the Chief Wildlife Warden (PCCF in Tamil Nadu and Karnataka, CCF in Kerala), who is the statutory authority vested with the powers to implement the provisions of WLP Act. Each of the elephant ranges has a field coordinator in each state (generally the respective territorial Conservator of Forests) and they are supposed to be in touch with their counterparts in the adjacent states and generally meet formally once in three months. The top functionaries of the southern states traditionally meet once a year to tie up loose ends.

C. Difficulties/constraints in design and implementation of the scheme:

The southern Indian elephant population is distributed over the Western Ghats and parts of Eastern Ghats in Kerala, Karnataka, Tamil Nadu and Andhra Pradesh. Most of the elephant habitats in this region are hilly with tropical evergreen, semi-evergreen, moist deciduous, dry deciduous and dry thorn forests in addition to high altitude grasslands, *shola* forests and plantations. The biodiversity value of the landscapes here are amongst the richest in the country. Some of the more notable

mammal species present are endemics such as Nilgiri Thar, Nilgiri Langur, Nilgiri Marten, and Lion-tailed Macaque. The extensive habitat with diverse vegetation types and a number of subsistence agriculture as well as cash crop (particularly tea and coffee, but also rubber, cardamom and other crops) cultivated areas and human settlements within also makes it one of the most complex regions in terms of conservation challenges. Maintenance of habitat contiguity through existing corridors or through consolidation of habitat while mitigating the adverse effects of elephant-human conflict, ivory poaching, fire and other degradation factors is indeed a mammoth challenge. The area has a large number of reservoirs for irrigation and electricity generation. Legal settlements and encroachments have reduced the effective habitat depriving the elephants of some of the traditional movement paths.

The common major problems in all these Reserves can be grouped as under:

1. Habitat degradation (invasion of weeds such as *Lantana* and *Chromolaena*, livestock grazing, fires, illicit felling, encroachments, illegal cultivation, etc)
2. Habitat fragmentation (road and canal networks, reservoirs, railways, nature resorts, agricultural development)
3. Human-animal conflict (crop raiding – obligatory and opportunistic crop raiders, retaliatory killings by electrocution/poisoning, problem animals)
4. Skewed distribution of age and sex classes due to selective poaching of male elephants for ivory, a very serious problem in this region.
5. Administrative and logistic issues (lack of funds, shortage of staff, lack of peer support and infrastructure)

D. Financial Performance:

Finances are usually never sufficient to cater to all the needs of the PE Reserves. However, appropriate allocation commensurate with the prioritized needs, timely sanction and release of funds are key to the success of any endeavour. It is also necessary to ensure that funds are utilized appropriately and the impacts are monitored. For this the following need to be adhered to:

1. All the participating states need to be told at the beginning of the FY the kitty available with the MoEF under the PE. A tentative allocation for each state on the basis of past performances may be indicated.
2. The MoEF should also indicate the priority areas where it would want the investments to go.
3. The state governments should accordingly be asked to submit their requirements giving due regard to the guidelines issued by the MoEF, supplemented by what it needs as a site-specific investments.
4. The proposals for each state then needs to be discussed threadbare with the concerned park directors and agreement be reached about the fund allocation to each state / site.
5. Sanctions should be issued as early towards the beginning of the FY as possible.

6. The MoEF should impress upon the state governments to put in place appropriate monitoring mechanism to ensure timely and appropriate utilization of funds. This would need the involvement of the senior level officers of the wildlife wing to assist the park director.
7. An evaluation needs to be carried out using dispassionate external agencies; involvement of knowledgeable NGOs may be considered.

The irony is that all these are in position. It however, does not yield the desired results and are generally ineffective as they are invariably rushed through and are treated perfunctorily. The system is sound but the user agency will have to make some response adjustments.

Table 1.2: Elephant population in the states under study

State	Year/ Population	2005 Bloc Count	2005 Dung Count
		Mean (LCL-UCL)	Mean (LCL-UCL)
Karnataka	2002 / 5838	4347(2375-6784)	6139* (5852 ^a -6425 ^b)
Kerala	2002 / 3850	3564 (2971-4157)	5135 (4069-6508)
Tamil Nadu	2002 / 3052		

* mean from 5 & 10% cutoff of data, ^a = 5% cutoff mean and ^b = 10% cutoff mean.

The figures indicate that the elephant population is relatively stable; the census methodology and its implementation would benefit from further refinement.

In subsequent pages we will deal separately with the pointed challenges and specific interventions of the three states. However, the last synchronized census as well as independent research studies show stability in the population, some increase in the number of tuskers and improvement in the sex ratio (mainly in Kerala). State governments are actively pursuing the case for replacing the exotics with palatable indigenous species. The frontline staff are dedicated and committed, the administrators are informed, concerned and supportive, and Veerappan stands liquidated. Such a combination is a sure potion for a better future for the elephants.

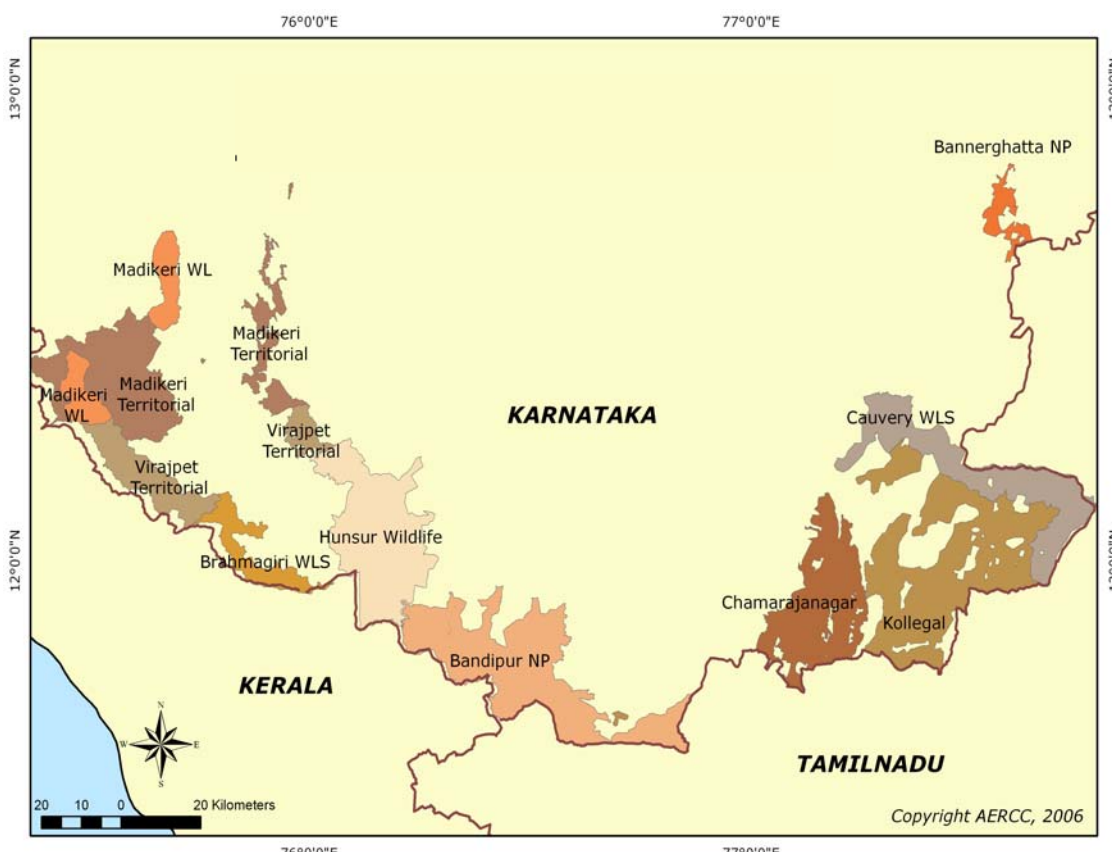
CHAPTER - II

PROJECT ELEPHANT KARNATAKA

Elephant habitat:

The elephant population of Karnataka exists in the form of a narrow band along the Tamil Nadu – Kerala border, covering mainly Kodagu, Nagarahole NP, Bandipur NP, BRT Sanctuary, Kollegal Division, Cauvery Sanctuary, and Bannerghatta NP, which is very close to Bangalore City together form the Mysore Elephant Reserve. The entire area, along with the adjacent forest areas of Kerala and Tamil Nadu, forms the 'Nilgiri - Eastern Ghats Elephant Range'. This reserve has a total population of about 5,000 elephants.

Figure 2.1: Map showing various forest divisions of Karnataka within the Elephant Range 7



Apart from the above areas located within the Mysore Elephant Reserve, elephants are also distributed in Bhadra Wildlife Sanctuary (200+ elephants) and Uttara Kannada (c. 50 elephants), and in some other places along the Western Ghats mostly as stray herds or bulls. These elephants are more or less cut off from those existing in

the Mysore Elephant Reserve. But still, as their instincts would have it, they break out occasionally in search of fresh ground. During 2003 a group of about 3 elephants broke out of Bannerghatta NP, passed through Tumkur, Tiptur, Arasikere and Chikamagalur and ultimately reached Bhadra Sanctuary. They were successfully driven back to their original homes.

Elephant problems in various districts

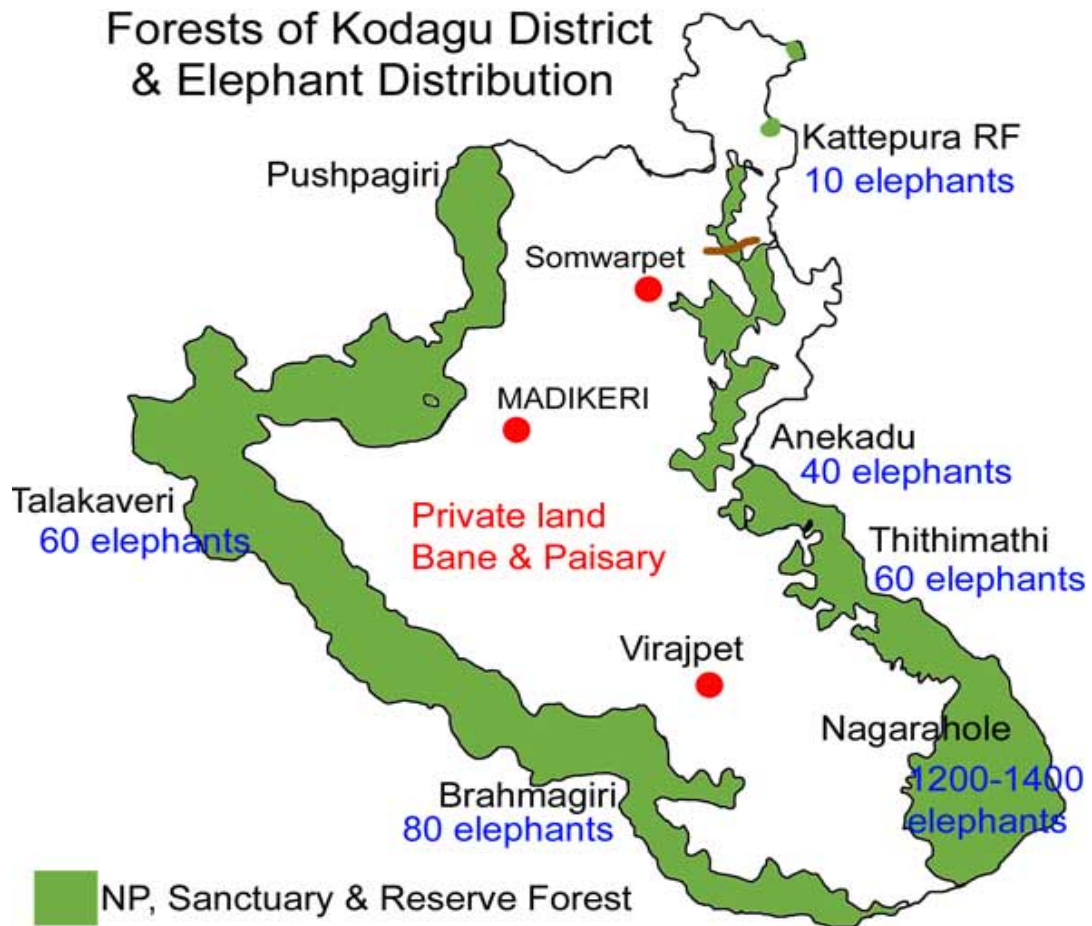
1. Mysore and Chamarajanagar districts:

Nagarahole NP (part), Bandipur NP, BRT WLS, Kollegal Division, and Cauvery WLS, which border Kerala and Tamil Nadu, are (heavily populated) important elephant areas. Most of Karnataka's elephants are found in these two districts and, to a lesser extent, in Kodagu. About 3000 elephants (2005 Block count) may be seen in the two districts. As seen from the elephant distribution map, the extensive stretch of forests has a large number of settlements within, thus resulting in crossing over of elephants into farmer's lands with damage to crops and loss of human life. There have been any number of representations to drive away the elephants, and the department is busy chasing the elephants back into forest on almost a regular basis. The people's representatives of these areas also have been complaining constantly about the elephant menace. Unfortunately there have also been several instances, particularly along the periphery of BRT WLS, of electrocution of elephants by farmers.

2. Kodagu District:

The only intact forests are located along the periphery of Kodagu district, with rest of the area consisting of coffee estates, paddy lands, etc, and the supporting 'Bane' and 'Paisary' lands. Part of the Nagarahole National Park falls within the district. Cultivation of coffee and other crops has increased in the last 20 years, resulting in reduction of the wooded areas in the district. There are about 1,400-1,600 elephants in Kodagu including in Nagarahole NP. As the forest habitat is narrow and confining, they by necessity frequently enter the coffee estates and small patches of forest (including *devarkadus*) within, causing damage to the crop and loss to the owners. The wealthier estate owners have installed solar-powered electric fences, by which they are able to ward off the elephants. This results in the elephants moving towards the smaller unprotected farms, which bear the brunt. Further, at the north-eastern tip there is a small Reserve Forest, called Katteपुरa (234 ha), that harbours up to 15 elephants, all of them bulls, seasonally. They move out in the daytime and raid crops in the estates and farms, and also move into the adjoining Hassan District. Past experience with capture and relocation of these elephants, going back to 1987, has not been successful as many of these elephants come back to Katteपुरa.

Fig. 2.2: Map showing forest areas of Kodagu district and elephant distribution



3. Bangalore District:

Close to Bangalore city is the Bannerghatta National Park (102 sq. km). This is contiguous with the forests in Tamil Nadu. Bannerghatta NP is a highly fragmented area containing about 100+ elephants that come into this park seasonally. The status of vegetation is believed to have improved in the park with the given protection while the department has also created many water bodies that have made the park attractive for elephants. Given the extremely narrow stretch of forest, the elephants inevitably encounter farmlands, causing damage to crop, in the course of their normal movements. Prosperous individuals of Bangalore city have purchased lands very close to the NP, dug bore wells and grown tempting crops for the elephants. During 2001-03 there was a dry spell, and the limited extent of the area of 102 sq. km. could not meet the requirements of the elephants. The elephants raided the neighbouring farms in search of food and water causing widespread law and order problems.

Fig. 2.3: Map showing forest areas of Bangalore district and elephant distribution



4. Hassan District:

There are about 40 resident elephants around the Bisle ghat region of Hassan district, which do not pose much problem. Of late, there has been intrusion of elephants from the neighbouring Kodagu district. In the last three years, 7 persons have been killed and a lot of crop has been damaged.

5. Uttara Kannada and Belgaum districts:

Though the elephant population in Uttara Kannada is comparatively small, i.e., about 50 in all, and is a source of big problem. There are pockets of agriculture all over Uttara Kannada and Khanapur taluk of Belgaum, cultivating mainly paddy deep within the forest. The paddy harvest coincides with the leafless period of the forest. Some elephants move to Khanapur taluk in search of paddy and sugarcane.

Conflict resolution:

Table 2.1: Details of elephant deaths

Year	Poaching	Gunshot	Electrocution	Total
2000-2001	16	2	10	28
2001-2002	6	7	13	26
2002-2003	7	3	12	22
2003-2004	6	7	12	25
2004-2005	2	-	8	10
Total	37	19	55	111

Table 2.2: The number of human deaths caused by elephants during the last two financial years is as under

Year	Total
2004-2005	10
2005-2006	19
Total	29

There is universal demand to reduce the conflict by preventing the elephants from entering the farmland. However, with the increase of the elephant population coupled with a similar situation for cattle and human populations, this presents a very difficult scenario. The state has used a combination of measures to deal with both the obligate and the occasional crop raiders. They are:

1. Digging and maintenance of elephant-proof trenches between forest and private land.
2. Installation of solar electric fencing at places.
3. Organizing elephant-scaring squads to chase back the elephants as and when they intrude outside the forest.
4. As suggested by Asian Nature Conservation Foundation at Indian Institute of Science, the department wants to use the discarded iron rails as an additional

barrier to be used in conjunction with the EP trenches or the electric fences to make it more effective. They have approached the Railways to let them have it at subsidized cost. The proposal needs to be seriously followed with the help of the central MoEF.

5. In acute cases, the elephants are captured, tamed and maintained in elephant camps with permission from Govt. of India.
6. The state government been undertaking various publicity and awareness generating programmes; the publicity material is of quality standards.
7. The officers and staff regularly engage in confidence building exercise by way of holding periodic meetings with the village communities. Needless to mention keeping the communication lines open is of cardinal importance in crisis situations. I was privy to one such meeting and was greatly impressed with the tact and finesse with which the issues were handled and the maturity shown by both the parties.
8. A combination of technical intervention and palliative measures have been accepted an essential tool of wildlife management. The state government has been regularly updating such initiatives of ex-gratia payments to farmers as crop compensation for damages suffered and ex-gratia for death and injuries to humans due to elephants (Table 5).

Table 2.3: Details compensation paid towards various damages including human casualty

S. No.	Particulars	Ex-gratia / Compensation
1	Ex-gratia to be sanctioned to a person with permanent disability caused by wild animals	Maximum Rs. 25,000/-
2	Ex-gratia to be sanctioned to a person injured by wild animals	Maximum Rs. 15,000/-
3	Ex-gratia to be sanctioned to the owner of the property due to attack of wild elephants	Maximum Rs. 5,000/-
4	Ex-gratia to be sanctioned to the land owners for the crop damages where value is Rs. 2,000 and less	Full value of estimated crop damaged
5	Ex-gratia to be sanctioned to the land owners for the crop damages where value is up to Rs. 2,001 and Rs. 10,000	Rs. 2,000 + 50% of the amount value exceeding Rs. 2000
6	Ex-gratia to be sanctioned to the heir of the person killed by wild animals	Rs. 1,00,000/-
7	Ex-gratia to be sanctioned to the land owners for the crop damages where value is more than Rs. 10,001	Rs. 6,000 + 30%, - maximum of Rs. 15,000

Habitat improvement works:

A vibrant core or critical habitat (especially dry season range) is important even for the management of a long ranging species such as the elephant. The increase in human population, the developmental process and the consequent expansion in infrastructure have resulted in the shrinkage, fragmentation and degradation of the area. The department carries out several measures under Project Elephant. Additionally some of the conservation works carried out for maintaining the National Parks and Sanctuaries also help in mitigating the problem. Briefly enumerated they are:

1. Creation of check-dams and tanks followed by regular regimen of desilting for ground water recharging and augmenting water availability within the habitat.
2. Programme for voluntary relocation of enclosures within forests, if the inhabitants are willing. The Bandipur TR is free from any human habitation, 436 families have been relocated from Bhadra, while the relocation of the villages from Nagarahole NP withstood the strict scrutiny of the World Bank.
3. Several corridors have been identified by IISc and Asian Nature Conservation Foundation, and graded as per their criticality by a study supported by Wildlife Trust of India. The Kaniyanpura corridor-connecting Bandipur with Satyamangalam Forest Division of Tamil Nadu has been strengthened with support from Project Elephant, though some further work here would ensure the long-term viability of the corridor. The PE authorities and the NGOs are jointly working to raise funds and convince the people to acquire other corridors. A corridor linking BRT WLS with Kollegal Division has been partly strengthened through acquisition of land by Wildlife Trust of India with technical assistance from Asian Nature Conservation Foundation. Such initiatives need to be speeded up as the newfound spurt in the tourism sector (some of it nature tourism) has made lands near these corridors hot property for setting up of the resorts.
4. There are reasonably large areas of plantations of exotic species like Eucalyptus. Plantations of bamboo and other indigenous palatable species augmenting the fodder availability are progressively replacing them.
5. *Lantana* and *Chromolaena* are the two major weeds colonizing the areas extensively leading to degradation and shrinkage of the effective habitat. Initiatives to control the invasion and reclaim the area do not appear to have been given priority in the state. At the same time, there appear to be no proven models for control and eradication of these invasive plants.

Protection initiatives:

1. Each PA has sufficient numbers of anti-poaching camps. They are generally manned by the tribal and the local people and are headed by a permanent staff member. They are equipped with 24-hour radio communication system. Wildlife Trust of India had conducted trainings for the front line staff engaged in anti-poaching in jungle craft, basic information gathering, and advance warning mechanism for the poacher groups and in unarmed combat. WTI had also supplied the basic field gear. The training imparted appeared to have

ingrained a sense of added responsibility to the staff. All this appears to be yielding dividends.

2. While the PAs have anti-poaching camps, the adjoining territorial divisions do not have any such outfit. This proves to be a major handicap. As elephant being a wide ranging species anti-poaching activity needs to be extended to all forest divisions that are subjected to ivory poaching pressure irrespective of PA network so as to protect the population completely.
3. Fire protection measures appeared to be adequately in place. During the fire season, the anti-poaching camps/squads also join hands with the firewatchers. While sporadic fires were common in the highly dry and deciduous forests, no major fires were reported during the last five years.
4. Karnataka shares common boundaries with Kerala and Tamil Nadu and there is a lot of interstate migration of elephants. The existence of timber smuggling on a reasonable magnitude also cannot be discounted. The disbanding of the STF may have some adverse impact in near future. Although the southern states have traditionally been regularly liaising formally at the highest level, the frequency and trust at the cutting edge needs improvement.
5. The ban on collection of NTFPs from the PAs is causing some stress situation amongst the tribals. However, with the coming in place of the Schedule Tribes Forest Rights Bill, 2006, the situation would warrant a serious relook. However, the tribals are engaged on priority for all the forestry works and there does not appear to be any major conflict with them, an exception being the Nagarhole National Park where tribals have been objecting to their relocation.
6. Men and machines play important roles in any protection planning. There are large-scale vacancies of the front line staff (Forest guards) due to long hiatus in recruitment. With the resumption of recruitment, the situation is likely to improve in near future. The position of vehicles in the field appeared to be sufficient.
7. Communication through RT system is satisfactory. Additionally, almost everybody has been carrying a mobile phone. The network coverage in most places is satisfactory.

Table 2.4: Details of posts vacant in the wildlife wing

S. No.	Category of Post	Sanctioned	Filled	Vacant
1	Foresters	194	113	81
2	Forest Guards	567	274	293
Total		761	387	374

Financial performance:

Given the problems at hand it was unanimously among the officials that funds were inadequate. Corridors need to be secured, barriers put up to contain the elephants, and the captive elephants appropriately managed.

Table 2.5: Details of funds received and expenditure incurred under CSS Project Elephant during the last 5 years

S. No.	Year	Amount received (Rs in lakhs)	Expenditure incurred (Rs in lakhs)
1.	2001-2002	92.45	92.45
2.	2002-2003	93.00	84.09
3.	2003-2004	149.66	148.59
4.	2004-2005	145.00	136.90
5.	2005-2006	168.00	131.22
6.	2006-2007	167.82	

CHAPTER - III

PROJECT ELEPHANT KERALA

Elephant Habitat:

Government of Kerala have constituted four Elephant Reserves in the State vide G.O.(P) No.19/2002/F&WLD dated 02-04-2002 under the Project Elephant Scheme based on the letter No.7-2/00(PE)(vi) dated 14-08-2002 of the Director, Project Elephant, Government of India.

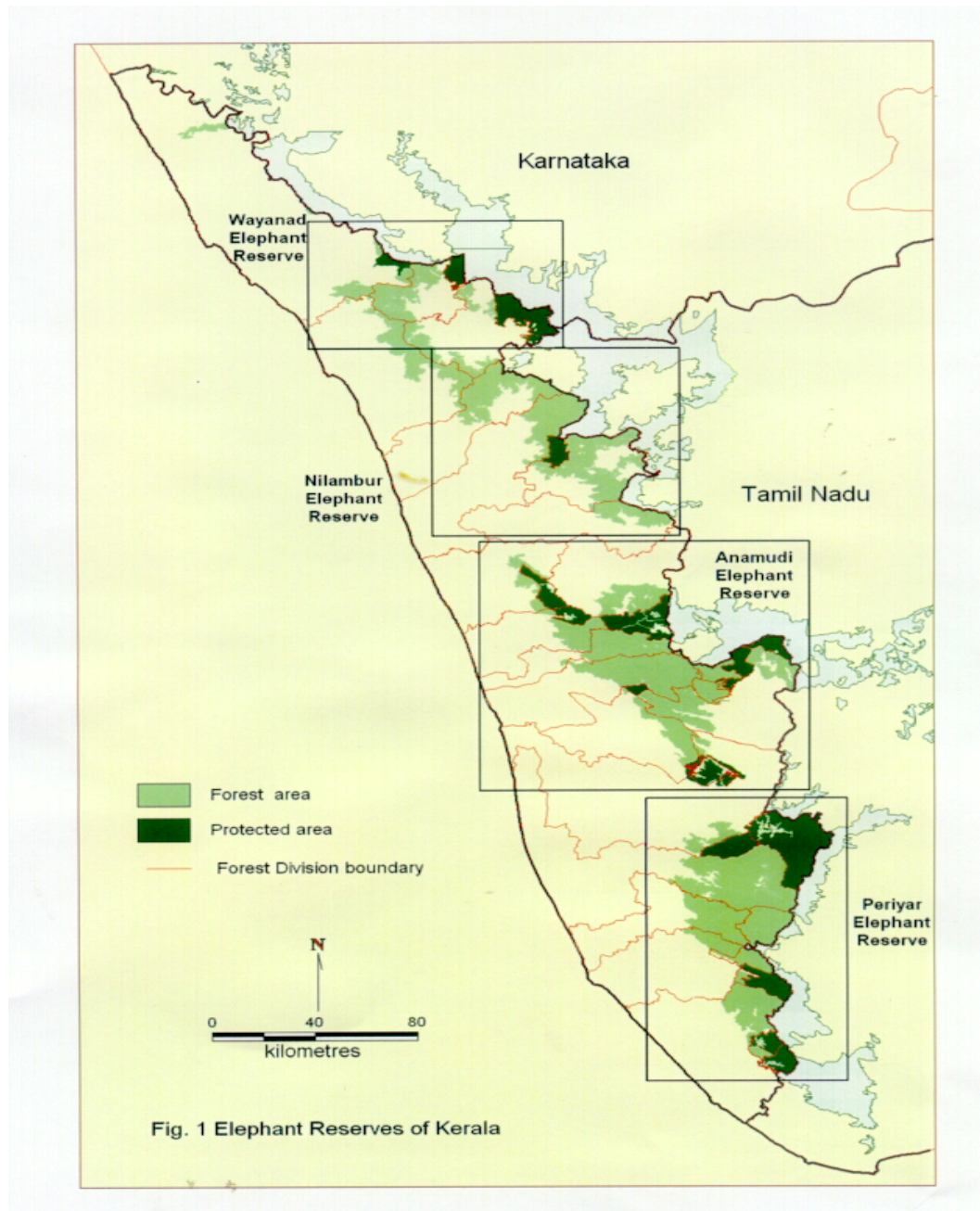
1. Wayanad Elephant Reserve (in Nilgiri Eastern Ghat Range)
2. Nilambur Elephant Reserve (in South-Nilgiri Range)
3. Anamudi Elephant Reserve (in Western Ghats Range) and
4. Periyar Elephant Reserve (in Periyar Range).

The Elephant Reserves in Kerala cover almost all the forest areas in the state. These forests are generally contiguous with neighbouring Tamil Nadu and Karnataka. The range movement of elephants suggests that the elephant population in the State may be constituted as ten sub-populations as under:

1. The Brahmagiri population ranges over the forests of North Wayanad and Kunnur divisions and protected areas of Aralam and Tholpetty ranges in Kerala, and Nagarhole forests of Karnataka.
2. The Wayanad population ranges over the forests of South Wayanad and Bandipur forests of Karnataka and Mudumalai Forest of Tamil Nadu.
3. The Kuttiyadi population is confined to forests south of Periyar range, which are administered by Mananthavadi, Kuttiyadi, Peruvannamuzhi and Thamarassery forest ranges.
4. The Meppadi population ranges over Meppadi, Nilambur, Edavanna, Vazhikkadavu and part of Thamarassery forest areas.
5. The population in Nilambur South, Silent Valley and Attappady and Mannarkkad forests is also contiguous with the Coimbatore Division of Tamil Nadu.
6. The Palakkad population ranges over Muthikulam, Walayar, Olavakkode and up to Attappadi through a narrow corridor in Tamil Nadu.
7. The Anamalai population is a viable population and ranges over Parambikulam, Nemmara, Trichur, Chalakkudi, Vazhachal, Malayattur, Munnar (This is isolated) and into the Tamil Nadu forests of Indira Gandhi Sanctuary and Palani hills.
8. The Idukki population is isolated from others and ranges over the forests of Idukki and parts of Kottayam, Kothamangalam and Munnar Divisions.

9. The Periyar population is again a large population that inhabits the forests of Periyar Tiger Reserve, Ranni, Konni, Punalur and Achankovil divisions and the adjoining Srivilliputhur forests of Tamil Nadu.
10. The Agasthyamalai population is the southern most population of elephants in Kerala and ranges over the forests of Thenmala, Thiruvananthapuram divisions and Shendurney, Peppara and Neyyar Wildlife Sanctuaries of Kerala and Kalakkad–Mundanthurai in Thirunelveli and Kanyakumari district in Ashambu hills of Tamil Nadu.

Figure: 3.1: Map showing various Elephant Reserves of Kerala



Status of elephant reserves in Kerala

Wayanad Elephant Reserve:

Wayanad Elephant Reserve spreads over 3 revenue districts of Kerala viz., Wayanad, Kannur and Kozhikkode. The total extent of the Elephant Reserve is about 1200 km² of which 394.4 km² is Protected Area. The forest administrative units such as Aralam and Wayanad Wildlife Sanctuaries, Kannur, Wayanad North, parts of Kozhikkode and Wayanad South (except Meppadi Range) territorial divisions constitute this Elephant Reserve. Wayanad Elephant Reserve represents part of one of the largest elephant ranges in the country along with Bandipur and Nagarhole in Karnataka, and Mudumalai Wildlife Sanctuary in Tamil Nadu. The western location of the Elephant Reserve in the moister tract plays an important role in the interstate migration and utilization by elephants especially during the peak dry season.

Threats:

The major threats in the Elephant Reserve are encroachment, tree felling, large number of settlements inside the forests (e.g. Wayanad – 79), cultivation of coffee/tea on the periphery of the forests, illicit distillation and heavy public transport through the forests. Apart from the above, the anthropogenic pressure on the habitat such as grazing, firewood collection, NTFP collection and extensive fire also exist in the Reserve. The increased human-wildlife conflict in the Elephant Reserve results from these anthropogenic pressures.

Crop depredation by elephants is common in the enclaves and in settlements along the outer boundary of the forest. There are also several cases of manslaughter by elephants. The incidence of human-elephant conflict seems to be on the rise.

The major corridors identified in the E.R are Tirunelli Corridor (Wayanad North Division) – Link between Wayanad WLS and Brahmagiri Hills through Kudrakote R.F and Tirunelli RF, Periya Corridor (Wayanad North Division) – Link between Hilldale RF and Kottiyur R.F of Wayanad North Division and Pakranthalam Corridor (Wayanad North Division) – Link between Kottiyur RF and Kannothe RF of Wayanad North Division. Asian Nature Conservation Foundation and Wildlife Trust of India have been active in securing corridors in the Tirunelli forests of Wayanad North Division.

Nilambur Elephant Reserve:

Nilambur Elephant Reserve spreads over three revenue districts of Kerala viz., Malappuram, Kozhikkode and Palakkad. The forest administrative units are Nilambur (N), Nilambur (S), Mannarkkad, Palakkad, Kozhikkode (part of Thamarassery range), Meppadi Range of Wayanad (South) and Silent Valley National Park Divisions. The total area is 1730 km² out of which 89.5 km² falls within the single Protected Area (Silent Valley NP) in this reserve. The availability of water and ranging area that extends to Tamil Nadu ensures some degree of genetic viability for this population

whose long-term viability is otherwise questionable. The extensive agricultural practices in the Attappady Valley as well as in the Nilambur area considerably narrowed the habitat for the free movement of elephants in this region.

Threats:

The major management problems are encroachment, presence of private estates, tree felling settlements inside the forests, illicit distillation, leases, potential area for ganja cultivation and supply of raw materials such as bamboo and reeds, to the industries. Anthropogenic pressure on the habitat such as grazing, firewood collection and NWFP collection lead to extensive fire.

The inter-state region of the Elephant Reserve especially in Mannarkkad division is the most sensitive area for poaching.

Extensive cultivation within and on the fringe of the Elephant Reserve coupled with anthropogenic pressures and narrow habitat for the movement in the reserve results in increased conflict. The incidents are on the rise.

The major corridors in the Reserve are Vazhikadavu corridor (Nilambur North Division) and Mannarkkad-Mukkali Corridor (Mannarkkad North Division). However, the significance of this corridor in maintaining genetic contiguity across the population is not as yet much appreciated.

Parambikulam Elephant Reserve:

Parambikulam Elephant Reserve to the south of the Palakkad Gap is spread over 4 revenue districts of Kerala viz, Palakkad, Thrissur, Ernakulam, Idukki. The forest administrative units are Parambikulam, Peechi Wildlife Sanctuary, Chimmoney, Thattekkad, Chinnar and Idukki Wildlife Sanctuaries, Eravikulam National Park, Nenmara, Thrissur, Chalakkudy, Vazhachal, Malayattoor, Mankulam and Munnar territorial divisions. The total extent of area is 3728 km² of which 780 km² falls under Protected Area. Parambikulam Elephant Reserve represents part of one of the larger elephant ranges in southern India and holds a sizeable population of elephants in Kerala. The elephant population seems demographically and genetically viable for long-term conservation. This population is cut off totally from the Periyar population due to the cardamom estates and also from the Nilambur ER permanently due to the Palakkad Gap. There are extensive teak plantations in Parambikulam.

Threats

The major threats in the Elephant Reserve are encroachment, tree felling, illicit distillation and heavy public transport through the forests. The anthropogenic pressure such as grazing, firewood collection, NWFP collection and extensive fire also exist in the Reserve. Human-wildlife conflict exists in some parts of the Elephant Reserve.

Periyar Elephant Reserve:

Periyar Elephant Reserve spreads over 5 revenue districts of Kerala viz., Idukki, Pathanamthitta, Kollam and Thiruvananthapuram. The forest administrative units such as Periyar Tiger Reserve, Neyyar, Peppara and Shendurney WLSs, Ranni, Konni, Achencoil, Thenmala, Punalur and Thiruvananthapuram territorial divisions add up to an extent of 3742 km² of which 1058 km² constitute Protected Areas. It must be mentioned here that divisions to the south of the Shencottah Gap were not part of the originally designated Project Elephant areas, but have been added subsequently by the state government. There is no evidence for the movement of elephants across the Shencottah Gap, and thus the reserve as presently described is actually constituted by two disjunct elephant populations.

Threats:

Periyar Tiger Reserve, Shendurney WLS, Ranni and Achencoil territorial divisions have been identified as existing areas of illegal ganja cultivation. Electrocution of elephants in Periyar Tiger Reserve and Ranni Division is common. Mass tourism and pilgrimage are major negative impacts to the habitat particularly in the tiger reserve. Kollam-Shencottah railway line bifurcates the elephant population in the ER. Public thoroughfare, monoculture, and sand mining, are other threats. This region had also been seriously impacted by ivory poaching during the 1970s and 1980s with the result that the sex ratio of the elephant population is heavily female-biased. Although it has since recovered to a certain extent, there is still a long way to go before the demographic and genetic health of the elephant population is restored.

Conflict Resolution:

Table 3.1: Details of elephant deaths reported between 2001-02 and 2006-07

Year	Poaching	Natural Death	Death due to Accident	Killed due to poisoning/ Electrocution	Total
2001-2002	5	5	-	9	19
2002-2003	7	51	14	2	74
2003-2004	11	10	5	4 *	30
2004-2005	4	19	24	1	48
2005-2006 **	1	39	-	-	40
2006-2007 **	3	52	-	2	57
Total	31	176	43	18	268

Table 3.2: Details compensation paid towards crop damage / human casualty between 2002-03 and 2006-07

Year	Amount in Rs. (Lakhs)
2002-2003	15.72
2003-04	6.913
2004-05	11.77
2005-06	4.89
2006-07 (Prov.)	3.00

The state government has been actively perusing the conventional methods to reduce the conflict; some of the initiatives are as under:

Table 3.3: Erection of barriers to prevent or reduce the forays of the elephants into the adjoining farmland

Year	Elephant Proof Trench	Power Fence
	(Km)	(Km)
2002-2003	03.91	06.38
2003-2004	24.00	13.47
2004-2005	24.43	11.28
2005-2006	10.00	15.00
2006-2007 (Prov.)	10.31	03.50

The state government has set up anti-poaching camps that also double up as firewatchers and elephant-scaring squads. These measures seem to have had reasonable success in recent years judging from the reduction in human deaths as well as elephant deaths due to conflict (see above tables).

Habitat Improvement works:

Kerala shares a large proportion of its elephant population with the adjoining states. The relatively higher rainfall in this state and the consequent available of fodder makes it a preferred habitat, especially during the dry season. Some of the major initiatives taken are:

1. Construction of water percolation tanks for surface water availability and ground water recharging.
2. The state government has initiated the process of voluntary relocation of the enclave human population. However, the availability of alternate land and funds have been major constraints.

3. The acquisition of land for corridors has made some headway; however, it is not clear that these are the priority areas for corridors strengthening. For instance, trying to restore a corridor between the completely isolated Idukki WLS and other regions may be a non-starter. The publication “Right of Passage: elephant corridors in India” brought out by Wildlife Trust of India in collaboration with various research organizations is a good source to begin identifying priority corridors.

Table 3.4: Details of acquisition of corridors

District	Year	Area acquired (Ha)	Amount spent (Rs. in Lakhs)
Idukki	Mar-95	28.2021	68.92
	Dec-05	3.164	29.18
Kannur	Mar-96	27.125	111.78
Total		58.4911	209.88

Habitat management intervention will have to on a more aggressive mode. Wayanad (the area I visited during this trip) has extensive area under teak and eucalyptus; simultaneously the invasion of *Lantana* has substantially reduced the effective habitat. The park director was wary of any intervention due to the Supreme Court judgment and the directions of the CEC. During the discussion it emerged that the following line of thought may be tried:

The entire operation can be initiated in a project mode. Wayanad has large areas of exotics. They may be replaced gradually by way of structured felling and artificial regeneration. Part of the funds generated by way of disposal can meet the cost of regeneration, while the rest can be used for the conventional eradication of *Lantana*, relocation of the villages and acquisition of the corridors. Such felling and disposal can then be justified as a non-commercial activity and for the benefit of wildlife.

Fire has been a major hazard and quite extensive in the drier areas. However, the response time for combating fire and the commitment of the staff to meet the challenge is commendable. Fire watch towers have been built and appropriately manned (mostly with local tribal) with wireless sets for communication.

Protection initiatives:

Each PA has sufficient number of anti-poaching camps. They are predominantly manned by the local tribals and headed by a regular staff. They are equipped with 24 hr radio communication. The position of transport also appeared to be satisfactory. While the policing activity appeared to be satisfactory, there appeared some diffidence to actually follow the cases themselves. In the bordering areas they prefer to hand over to their counterparts from the neighboring state.

There is no sanctioned post exclusively for the implementation of the scheme Project Elephant. The existing staff is carrying out the works. The vacancy position is as under.

Table 3.5: Details vacancies exist in various Protected Areas

Name of the Protected Area	Staff Position (Existing)				Vacancy Position			
	Ranger	Deputy Ranger	Forester	Forest Guards	Ranger	Deputy Ranger	Forester	Forest Guards
Neyyar WLS	1	1	8	21				1
Peppara WLS	1	1	3	7				
Shendurney WLS	1		4	8				1
Periyar Tiger Reserve	8	3	35	133	1		2	12
Eravikulam NP	8	1	3	16			1	4
Chinnar WLS	1	2	7	32			4	7
Idukki WLS	1		3	13				1
Thattekad Sanctuary	1	1	2	3				2
Parambikulam WLS	4		16	31				
Peechi WLS	2	1	7	20			2	
Chimmony WLS	2	1	7	20				
Silent Valley NP	1		6	6				
Wayanad WLS	4	4	24	34				
Aralam WLS	1		4	4				
Mathi Kettan NP	1	1	4	16				3

The propensity to launch projects without sanctioning appropriate support staff is a self-defeating exercise. The WL wing shared similar views; the GoI may consider giving it a serious thought.

Periyar has been in the news because of the intensive, historical poaching of elephants and the skewed sex ratio. The implementation of the India Eco-development Project has helped it to turn around. The way participation has been built up with the surrounding people and the synergic relation with the NGOs is for others to emulate. This has given new dimension to protection and sustainable generation of funds.

The Wayanad is one area where there were some incidents of conflict with tribals. In early Jan 2003, a major dispute broke out as a part of encroachment by the tribal. Police action took place wherein a couple of people died including a police constable. A forester was injured. Every year they commemorate this day by way of setting fire to some areas of the sanctuary. This year, in addition, they damaged a multi utility watchtower that was constructed with support from WTI.

Financial Performance:

Table 3.6: Details of financial performance between 2002-03 and 2006-07 (figures in lakhs)

Year	Budget provision	Government of India Release			Utilization details
		Revalidation	Fresh	Total	
2002-03	200	23.39	111.88	135.27	118.414
2003-04	200	16.461	188.28	204.741	168.117
2004-05	200	38.027	167.4	205.427	156.399
2005-06	200	47.1	171.928	219.028	194.14
2006-07 (up to 02/07)	200	24.89	169.4	194.29	91.48

While the fund allocation has been inadequate, the utilization too has not been satisfactory. The main reason cited has been late release of funds by the governments. The main difficulties faced are as under:

- Funds are not released in one-go by GOI well in advance for proper planning and implementation of the Project.
- Sufficient funds are not allotted by GOI for acquisition of critical corridors.
- The population of captive elephants in the state is high. Due to the non-availability of land, the construction of elephant shelter is not practicable. If sufficient funds are allotted, suitable land can be acquired for establishment of shelters.
- Government of India may provide sufficient funds for imparting mahouts training effectively.
- Funds should be provided for taking effective steps on management of captive elephants with special emphasis on awareness programmes.

CHAPTER - IV

PROJECT ELEPHANT TAMIL NADU

Elephant Habitat

In pursuance of the various notifications issued by the GoI, the State Government of Tamil Nadu has declared the following four elephant Reserves:

1. Nilgiri Elephant Reserve

This reserve has a total area of 4662.4 km² (core 716.2 km² and buffer 3946.2 km²) falls within the districts of Nilgiris, Erode and Dharmapuri. The forest divisions of Gudalur, Nilgiris North and South, Sathyamangalam, Erode, Hosur, Dharmapuri and Mudumalai WLS make up the habitat. The Cauvery river, and its tributary the Moyar, are the most important sources of water. The reserve boasts of the entire spectrum of the vegetation types of peninsular India. The area has large tracts of teak, *Eucalyptus*, other softwood and pepper plantations. The Nilgiri Elephant Reserve is strategically located in relation to other elephant reserves in the south. At the center of this extensive elephant landscape is the Sigur plateau – Moyar valley, located at the junction of the Eastern and Western Ghat mountain ranges. Within this area at least eight bottlenecks for elephants have been identified. This area is a designated CITES-MIKE (Monitoring the Illegal Killing of Elephants) site.

Threats:

The large human population both within and along the periphery has a very negative impact on the habitat. Collection of firewood, illicit felling of trees, grazing by livestock and collection of dung are major issues of concern. Most of the existing corridors are threatened by infrastructure developments. The corridors are on the priority list of tourist resort developers. Plans to construct a road from Thengumarada to Siritur through the Moyar valley will open this critical habitat and corridor to human disturbances. Similarly the planned railway line from Sathyamangalam town to Chamarajanagar will truncate the habitat and would limit access of elephants to the Moyar River – an important source of water. There would also be serious risks of train accidents resulting in elephant deaths, as has been the case in many other parts of the country. Poaching, once rampant, has fortunately gone down visibly. Invasion of weeds (*Lantana* and *Chromolaena*) has resulted in diminished availability of fodder.

Figure 4.1: Map showing various elephant ranging forest divisions of Tamil Nadu

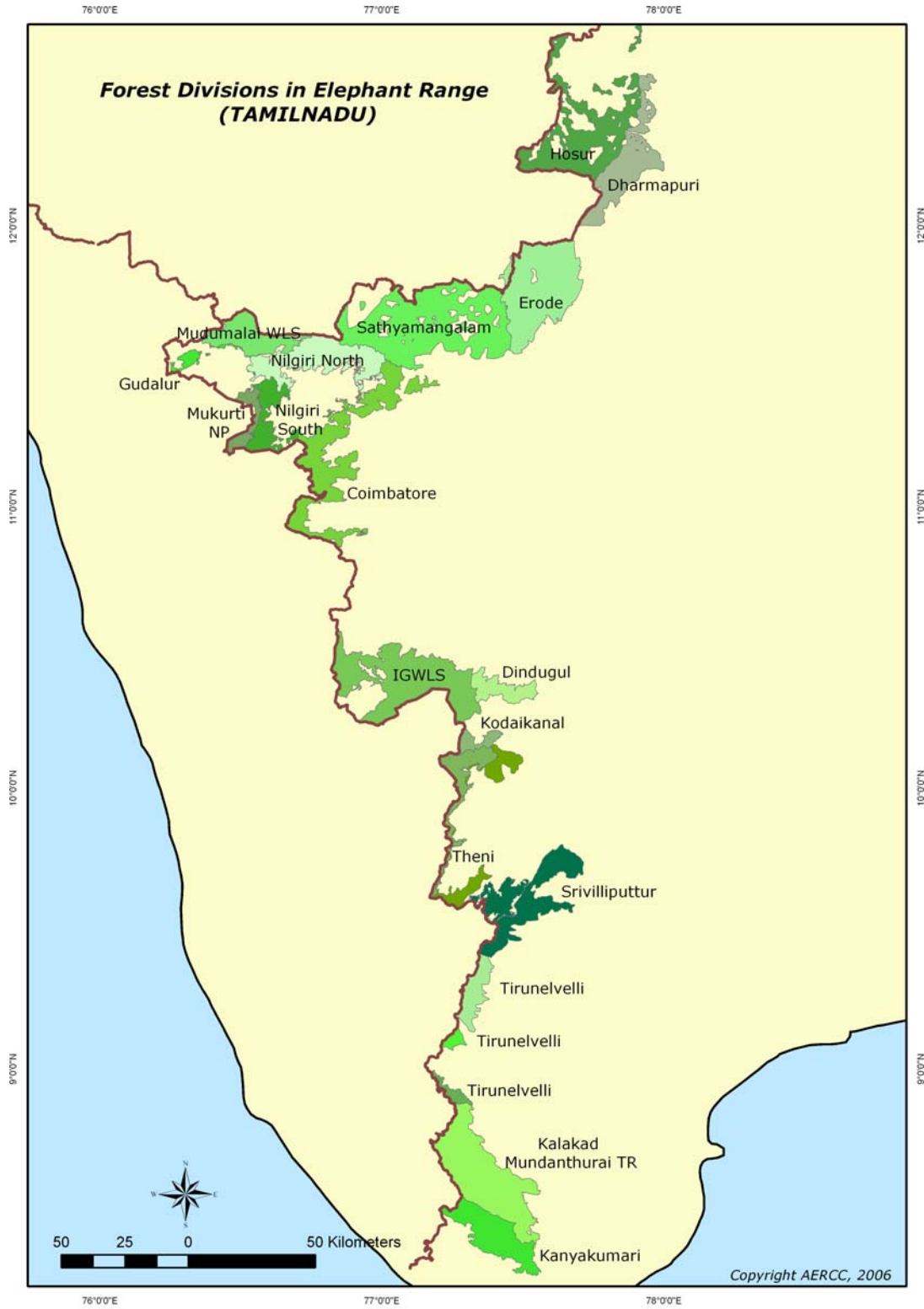
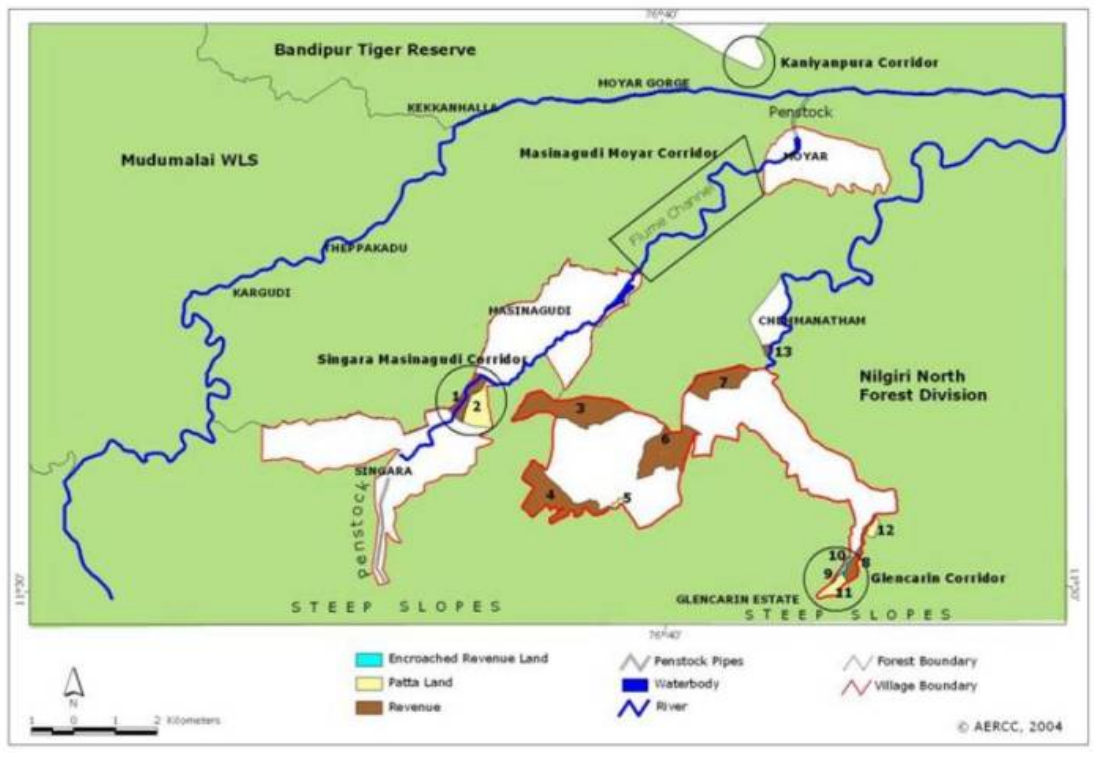


Figure 4.2: Map showing the elephant corridors of Nilgiri Elephant Reserve



2. Coimbatore Elephant Reserve:

The reserve has a total area of 565.6 km² (core 482.0 km², buffer 83.6 km²) and falls within the districts of Coimbatore and Nilgiris. The elephant habitat comprises the Coimbatore and Nilgiris South Forest Divisions and Mukurthi NP. The geography of the reserve is influenced by the Nilgiris mountains. The major rivers in the reserve are the Chaliyar flowing southwest and draining the Nilambur and Manjeri Kovilagams, the Karimpuzha flowing west through the New Amarambalam RF, the Kuntipuzha flowing south through the Silent Valley RF and the Bhawani from Upper Nilgiris into Cauvery. The reserve contains a diversity of vegetation types as a consequence of its varying climatic and geographic conditions. Conversion of grassland into plantations of wattle, eucalypts and pine in the Mukurthi National Park and Nilgiri South Division, in the past, has lowered the quality of the habitat for elephants. Large areas of the Nilgiri South Division fall under tea and potato cultivation. Mukurthi NP and Nilgiris South Division also have the best tracts of *shola* forests and grasslands north of the Palghat Gap. The small population of elephants here seems to range seasonally with movement to lower elevation areas of Kerala.

Threats:

Tamil Nadu Electricity Board has occupied a large area in Nilgiris South Division and the Mukurthi NP in connection with the execution of various hydro-electric projects, leading to fragmentation of the habitat. There are many wood-based industries located here and their demands are met by plantations in the Nilgiri South Division. The road from Mukali to Anaikatti in Tamil Nadu via Agali, along the Attapadi valley and parallel to the Bhawani river, has dense settlements which have completely terminated elephant movement between the two portions of the Attapadi RF. Repeated fire and human encroachment, on the western and southern peripheries of the Silent Valley National Park, seem to be major problems. Even though these convert natural vegetation to grasslands, which may actually be preferred by elephants, their negative impact on the biodiversity of the area is to be seriously considered. The dry thorn and deciduous forests of the Coimbatore Division have been degraded in the past due to fire, cattle grazing and fuel extraction. Being relatively arid compared to the rest of the reserve, agriculture is of the subsistence variety putting a great deal of stress on the forest.

Anamalai Elephant Reserve:

The area of the reserve is 1457.2 km² (core 300.0 km², buffer 1157.2 km²) in the districts of Coimbatore and Dindigul. The habitat comprises of Dindigul and Kodaikanal Forest Divisions and Indira Gandhi WLS. This reserve is situated south of the Palghat gap, has several perennial and semi-perennial river systems and man-made reservoirs. The complex topography and rainfall gradient contribute to a striking diversity in vegetation. In some of the divisions, this natural vegetation has disappeared because of extensive tea cultivation. Between these vast commercial tea plantations, patches of *shola* forest and grassland type of vegetation can be observed. In some divisions the natural vegetation has now been converted to extensive teak, wattle, blue-gum, and pine plantations.

Threats:

A series of hydro-electric and irrigation projects has disturbed the natural movement of the elephants. Tea, coffee and cardamom estates have taken up large areas and obstruct the movement of the elephants, with serious elephant-human conflict in the Valparai plateau. Conversion of large tracts of natural forests to softwood plantations followed by the infestation of unpalatable weeds (*Lantana*, *Chromolaena* and *Mikanea*) has shrunk the habitat. Extraction of weeds for *ganja* cultivation cuts into elephant's food availability. There are several parts in this reserve and adjoining reserve (Parambikulam Elephant Reserve) where the constriction of habitat has led to virtual isolation of small elephant herds. The viability of these herds and the habitat is in serious doubt.

Madurai Elephant Reserve:

The reserve has a total area of 1249.1 km² (core 568.3 km², buffer 680.8 km²) and located in the districts of Theni, Tirunelveli and Virudhunagar and encompassing the Theni and Tirunelveli forest divisions and Grizzled Giant Squirrel WLS. This reserve is

probably the most compact block of elephant habitat in the south, with the least fragmentation. Theni Division has mixed deciduous forest on the Varshunad hills, and dry thorn forest along the foothills. There are also extensive plantations of Eucalyptus and to a lesser extent teak in parts of the reserve.

Threats:

On a relative scale there is not much depredation of crops or manslaughter by elephants in this reserve. There are several parts in this reserve where the constriction of habitat has led to virtual isolation of small elephant herds. Illegal cultivation of ganja occurs in the interior of the forests. For the ganja cultivation, prime reed areas, highly favoured as food by elephants, are selected and the area is cleared for the cultivation. There is also illegal exploitation of forest products such as bark of cinnamon, reeds, etc. within the reserve. The ruins of an ancient temple are found at Mangaladevi, 14 km to the northeast of Thekkady and bordering Tamil Nadu. Access to Mangaladevi is restricted and requires special permission. However, there is a proposal to construct a road from the Tamil Nadu side, which may cause severe disturbance and damage to the habitat.

Conflict Resolution:

Any but the lowest density of large wild animals and people are fundamentally incompatible. Population pressure is already on the rise development activities eat into the habitat and conservation pushes up the animal density. Conflict therefore, invariably follows conservation, which should appropriately respond to the resolution mechanism.

Table 4.1: Details of elephant deaths reported between 2001 and 2006

Year	Poaching	Electrocution
2001	5	3
2002	7	4
2003	2	3
2004	Nil	7
2005	Nil	5
2006	1	3

The state government has successfully utilized a large section of the tribal population in recent years for effective anti-poaching activities. Reasonably habitable camps have been set up at strategic locations, manned by the local people (read tribal) and headed by a permanent staff. The concentration of such camps is around PAs but cover the wildlife habitat outside the PAs as well. They are connected through 24 hr RT. Such camp dwellers are paid according to the availability of funds, which includes free rations delivered at site. They serve to generate local employment, tap intrinsic traditional knowledge (ITK) and acts as force multipliers including infusion of fresh blood in the protection force. The idea is indeed laudable, but the wages to the poor tribal should not be determined by the availability of funds. They should be paid equitable and adequate wages.

Table 4.2: Details of human deaths recorded and compensation paid between 2001-02 and 2005-06

Year	Incidents	Compensation (Rs. In lakhs)
2001 – 02	23	20
2002 – 03	17	16.5
2003 – 04	25	23.75
2004 – 05	15	14.5
2005 - 06	19	18.75

Table 4.3: Details of compensation paid for damages to crops between 2001-02 and 2005-06

Year	Incidents	Compensation Rs. in Lakhs
2001 – 02	xxx	Xxx
2002 – 03	423	12.325
2003 – 04	232	5.414
2004 – 05	185	7.113
2005 – 06	85	3.92

The other initiatives are:

- The anti-poaching squads perform multiple functions including driving of the crop raiding elephants (anti-depredation squads) and firewatchers.
- Elephant-proof trenches are dug around the critical areas. They are used in conjunction with the solar powered fences and seem to be effective.
- The power fences after erection are handed to the local people for future maintenance. This is generally done through a written contract.
- The state government has developed a unique method, known as the “Dharmapuri Method” of driving elephants. A combination of sound and lights are used to guide the passage of the elephants. Ostensibly this can be used only during the dark hours, but I was surprised to know that the elephants actually use the light beam to see the passage. In rest of the country, the strong beam is used to temporarily blind the animal to stop its forward movement.
- As per GO issued in November 2003, a high level committee has been formed to function as trust in settling the Ex-gratia / compensation for the loss of human life or injuries, and damage to the crops caused by the wild elephants. This expedites the disbursements.

- The government depends heavily on sensitizing the local people who have come to accept damages as a part of life.
- Capture and translocation of problem animals continue to remain a potent tool.

Habitat Improvement works:

- The enunciation of the Forest Policy in 1952 followed by the recommendation of the National Commission on Agriculture (report by 1976) saw a huge spurt in clear felling natural forest and replacing them by fast growing soft woods. Tamil Nadu has been no exception. There exist large tracts of monoculture (blue gum, teak, wattle etc), which are gradually being replaced by palatable indigenous spp. Including bamboos. Habitat amelioration activities are being undertaken under TAP2 (Tamil Nadu Afforestation Programme, phase II) HADP (Hill Area Development Programme), Western Ghats Development Programme, and Part I schemes of the state government.
- There has been extensive invasion of unpalatable weeds (*Lantana* sp., *Chromolaena* sp.) reducing the food availability in the reserves. Mechanical removals of the weeds have been taken up in a phased manner in limited areas, but the results are not clear.
- Ensuring continuity of habitat ensures genetic exchange. Corridors play a major role in this. Acquisition of (a) Moyar- Singara corridor to the east of Mudumalai, (b) Jakanari-Kallar corridor and (c) Mavinhalla corridor (coffee estate), all of them in the Nilgiri North Division, are in the advanced stages of finalization. State government is providing funds for this. Research institutions such as Indian Institute Science and NGOs like the Nilgiri Wildlife and Environmental Society are chipping in their bit by providing technical assistance.
- Dry deciduous forests of Mudumalai, Nilgiris North and Coimbatore divisions, primarily being dry tracts, are subject to periodical fire. Intensive clearing of the fire lines, intensive fire watch (from high fire watch towers) have ensured fire being kept under control. The response time to fire incidence is reasonable short and all fires are strictly monitored at the highest levels. Due to winter rains, fire was greatly under control during the current year.
- During the pinch period all the water sources dry out and stress situation is created in the reserve. New water holes, percolation tanks check dams are set up in strategic locations and the existing ones are regularly de-silted.
- The policies of the government to involve the local population in the protection of the forests have paid rich dividends. Discussions with the CWLW revealed almost 90% reduction of head loaders and 70% reduction in grazing in identified areas. This contributes very positively to the habitat improvement.

- The government in their latest initiative has undertaken providing LPG gas ovens, stoves to the poorer sections of the people. This is likely to further reduce removals from the forests

Protection Initiatives / Constraints

- Each PA has sufficient number of anti-poaching camps. Necessary arrangements for their training in different aspects of primary jungle craft are arranged.
- The WLW suffers from shortage of skilled permanent manpower. Further, due to long time ban on recruitment, there is shortage of young and agile frontline staff.
- There is no dedicated staff for the wildlife wing; further, the CWLW does not have any control on posting and disciplinary action on the staff involved with management of wildlife. His role is primarily advisory.
- The position of RT communication equipment, arms and ammunition, vehicles and roads are satisfactory.
- Employing the tribals in anti-poaching and protection activities has yielded desired results. The conflicts have come down. However, continuity has to be ensured and they should be paid appropriate wages.
- KMTR was a participating unit in the India Eco-development Project. The lessons learnt there have attempted to be replicated in some of the parks (Mudumalai). People's participation has strengthened protection.

The intelligence gathering mechanism is in position and is appropriately used.

Financial performance:

Table 4.4: The performance during the last five years is as under (all figures in Rs. Lakhs)

S. No.	Year	Proposal to Gol	Gol Sanction	Gol release	Unspent previous year	Release of SG	Utilization
1	2002-03	136.01	79.66	71.26	8.46	79.72	57.56
2	2003-04	239.47	139.19	127	12.1	149.1	117.3
3	2004-05	190.568	141.8	84	21.8	104.53	XX
4	2005-06	427.9	160.44	112	1.44	113.27	104.36
5	2006-07	524.12	153.69	110	0.26	110.1	113.16

It is seen that not only there is substantial gap between demand and sanction the state government could not fully utilize the meager resources allocated to them.

CHAPTER - V

OVERALL CONCLUSIONS & OBSERVATIONS

In view of the aforementioned discussions with the three southern states, we would attempt to specifically make observations on the following issues:

1. **Need for focused approach:** The southern Indian states are fortunate to have some of the largest elephant populations not only in India but also in Asia. The numbers have also been increasing over the past two decades in the region. Thus, elephant population numbers *per se* are not an issue as far as southern India is concerned. The goals of management should thus be to consolidate the habitats to avoid further fragmentation, take steps to reduce and, eventually, eliminate elephant-human conflicts in a phased manner, and build up a demographically and genetically vibrant elephant population by protecting the tusked males from ivory poaching. While there has been progress in recent years in reducing poaching, the states have a long way to go with respect to consolidating habitats and reducing conflicts. A more focused approach to tackling these issues is recommended. We strongly recommend that a proportion of the funds allocated is specifically designated for strengthening corridors and not be utilized for other purposes.
2. **Anti-poaching measures** should also be extended to territorial forest divisions rather than being restricted to the PA network alone, considering the fact that elephants from PA network also range over adjoining territorial divisions due to their wide-ranging nature. The territorial areas usually lack funding, manpower (staff strength) and infrastructures for wildlife protection but may hold substantial numbers of elephants. This is especially true of the south where territorial divisions such as Hosur, Satyamangalam, Nilgiri North (Tamil Nadu), Kollegal (Karnataka), Vazhachal, and Malayattur (Kerala) have sizeable elephant populations. Without such anti-poaching activities extended to territorial divisions, efforts taken to control poaching are incomplete. Anti-poaching measures have to be planned at the landscape or population level depending on the ivory poaching pressure.
3. **The synchronized elephant census** needs to be scheduled at fixed intervals of three to four years period. Methods have to be refined with the help of research institutions. Population estimation by direct method (Sample Block Count) method is best carried out in the middle of the dry season (late March that may difficult for administrative reasons, or early April) so as to have good visibility and maximize accuracy of estimate. The indirect method (Dung count method) should be planned for two or three times in the year in order to overcome the problem of steady state assumption (over accumulation of dung piles due to low decay during winter, under representation of dung piles due to fire in dry season, or very rapid decay during the heavy rains). Special training for the field level

staff on population size and structure will have to be given for improving the quality of census outputs.

4. **Utilization of funds:** Since funds available to the states are limited, these have to be utilized in various forest divisions or elephant reserves within a state in rough proportion to the elephant population size it supports. Diverting a major proportion of funds to high conflict areas but with few or a low proportion of elephants (towards crop compensation and any other temporary protection measures such as electric fencing or trenching) may result in lack of funding to areas with higher proportion of elephants or large elephant populations. At the same time this would also result in inadequate attention to permanent mitigative measures for elephant-human conflict or consolidation of habitats through acquisition of corridors, etc. in the important elephant areas/regions. Thus, Project Elephant should ensure these aspects of effective utilization of funds by the state government.
5. **Management of problem elephants:** Project Elephant also needs to take policy decisions of capturing isolated “problem elephants” and keeping them in captivity (if they are females). Problem males that are being captured from isolated forest patches could be translocated to larger areas without sufficient males, but only after fitting them with GPS collars to monitor their movements for a couple of years. If these elephants do not settle down but enter into conflict with settlements they can be managed more easily (for instance, through driving) or easily recaptured and retained in captivity. Project Elephant could procure a few GPS collars and distribute them to various regions of the country for use in emergency translocation.
6. **Impact of the scheme on tribal and women beneficiaries / community:** For the rural poor, whose life is a daily battle for economic survival, the elephants can be a menace. The fragmentation of the forests has compelled the wildlife to foray into the adjoining agricultural and fallow land. Therefore, it is inevitable that the major fauna will disappear unless the damages they caused are either appropriately compensated. Alternately, the presence of the elephants needs to generate sufficient revenue so that it can be used as a livelihood option (*e.g.* Eco-tourism). The Project attempts to address the issue through both the options. On the one hand, it provides for compensation for the damages, and on the other it also encourages tourism. The government needs to put in place the appropriate mechanism to ensure that a larger proportion of the benefits of the tourism trade flow to the local people. Africa has done it successfully at places, and so has Periyar Tiger Reserve nearer at home. The tourism industry is growing at a phenomenal rate with nature tourism making up the bulk segment. Project Elephant is poised to use this road for the reciprocal benefit of the community and conservation of the elephants.

The project has been using the Indigenous/Traditional Knowledge of the local tribals in protection and habitat improvement works, thereby ensuring their active involvement. All through, a symbiotic relationship exists.

The lessons learnt from the India Eco-development Project needs to be replicated here across the Reserves. It is already yielding dividends including the setting up of self-help groups in Periyar and Mudumalai. The economic revival of the local people is inextricably linked with conservation and vice versa.

7. Change / modification in the programme design, implementation, operational efficiency and accountability: The project is being run independent of other projects. There are many areas where it is coterminous with other high profile projects (cf. Periyar, Bandipur Tiger Reserves). In many cases the interventions are either duplicative or contradictory. Appropriate liaison is the call of the day.

It is time to run the project on a mission/project mode to be implemented on a holistic landscape. A long-term perspective plan needs to be placed in position and the annual plans to be a part of the overall vision. Fund release needs to be timely and monitoring and evaluation to be entrusted to outside independent agencies.

The Reserves are under staffed. There are sufficient vacancies in the frontline staff. Training is not commensurate with the present demands. Wildlife management is a highly risk-prone and a demanding job. For it to deliver, the managers are to be aptly provided for.

- 8. Recommendations on continued relevance of the scheme:** The scheme attempts to protect this long ranging animal with its enormous space and resource needs. It has catalyzed tourism, research and rural development over a wide landscape. The Project Elephant Ranges and Reserves encompass some of the most biologically rich habitats in the country and globally (the Western Ghats being recognized as one of the global “hot spots” of biodiversity). The conservation of these habitats also ensures the conservation of overall biodiversity. After fifteen years the project has just started to show results. It needs support from all the concerned agencies so as to deliver benefits to a large segment of the society.