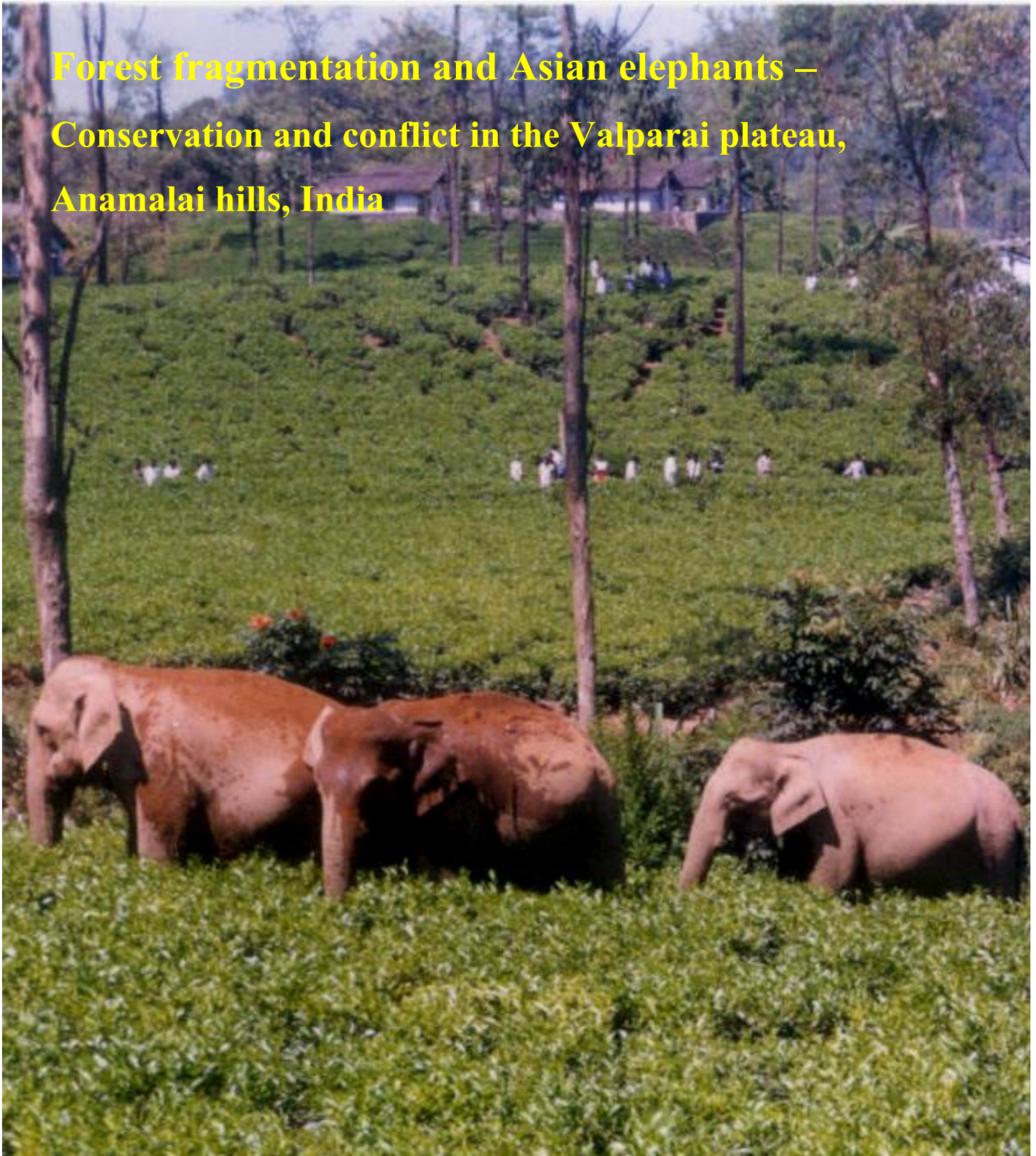


**Forest fragmentation and Asian elephants –
Conservation and conflict in the Valparai plateau,
Anamalai hills, India**



Interim Report (April 2002 – October 2002)

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1. **The Region:** The Anamalai, a hill range in southern India named after the Asian elephant *Elephas maximus*, contains the second largest population of this endangered flagship species in India. Within this region lies the Valparai plateau, a 200 km² area with a dense human population of 250,000 people spread over a landscape of plantations of tea, coffee, and *Eucalyptus* belonging to about 50 private estates and companies (Figure 1). The Valparai plateau, once containing a large tract of tropical rainforest now only has remnant fragments that form critical wildlife habitat within the matrix of plantations.
2. **Conservation Problems:** Two major issues confront managers working for the conservation of Asian elephant in this region. First, the complete lack of data on elephant population structure and dynamics, habitat use, and movement patterns, stymies conservation efforts in this region. Second, there is high and apparently increasing conflict between elephants and people as herds of elephants move through private land causing damage to property, crop depredation, injuries and loss of human life. Very little is known on the extent and causes of conflict that would help identify measures to reduce conflict.

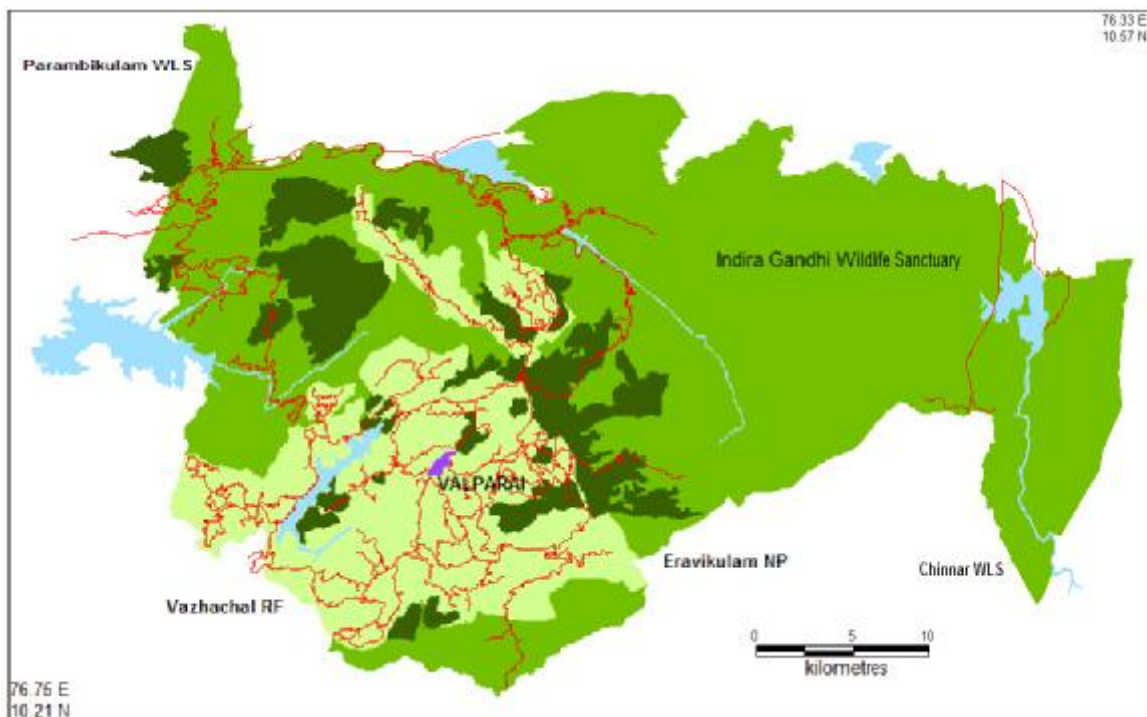


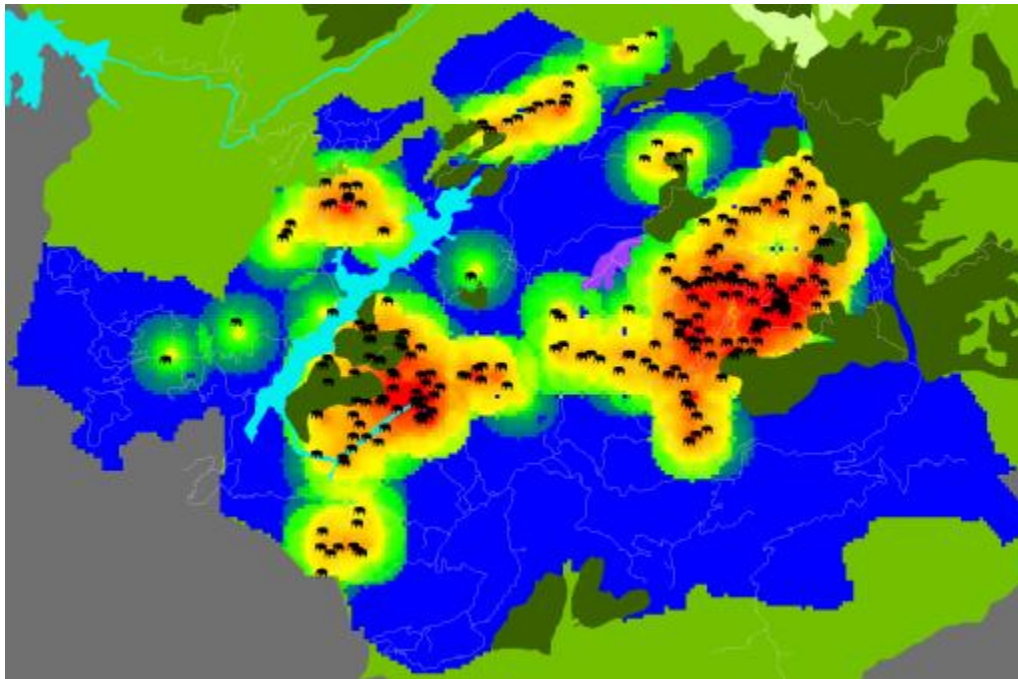
Figure 1.: Map of Indira Gandhi Wildlife Sanctuary, Anamalai hills, showing private lands of the Valparai plateau (yellow), surrounding wildlife protected areas, rainforest fragments (dark green), reservoirs (blue), and roads (red).

3. **Objectives of the Project:** In this background, we initiated this project to (a) study Asian elephant movements and use of plantations and rainforest remnants in the fragmented landscape of the Valparai plateau, (b) identify the patterns and correlates of these movement patterns in relation to land-use and resource availability, (c) assess the spatial and temporal distribution of conflict incidents and identify potential causes and strategies for management, (d) disseminate the findings through publications and workshops to private landowners and companies, and the Forest Department in order to evolve strategies for minimising conflict and effecting conservation of elephants.
4. **Activities:** Over the past seven months, elephant movements and distribution were monitored through foot and road surveys, tracking focal herds, and opportunistic observations across the Valparai plateau. We have set up a network of informants from the local community spread across the Valparai plateau who inform us whenever Asian elephant herds enter properties in their vicinity. A number of rainforest fragments have been surveyed for elephant presence and these areas are now being carefully mapped. Several discussions and a public meeting were held with private landowners, local administration and Forest Department officials, and company managers to obtain feedback on elephant conflict-related issues, compile past records and collect maps. Field surveys and ground-truthing have also been carried out in order to prepare a detailed habitat and land-use map of the area.
5. **Asian elephant movements:** We closely monitored movements of 9 focal herds, numbering 8 to 20 elephants (a total of 93 elephants) through the Valparai plateau between April and October 2002 (Table 1). Each herd was located once or twice each day and tracked for its movement through fragments, plantations, and human settlements. Individual animals were identified by physical marks and herd age-sex composition was noted. A total of 356 observations was made of these herds and 329 GPS locations were also obtained pin-pointing their locations and routes taken. The distribution of elephants on the Valparai plateau appeared clustered, particularly along one major route that bisects the private lands in the region (Figure 1).

Table 1: Summary of observations of elephant herds on the Valparai plateau

Herd ID	Number of elephants	Number of observations	Period	Number of days	Damage incidents
U1	8	68	16 Apr – 21 May	36	12
S2	9	18	22 May – 04 Jun	14	3 (1 death)
U2	11	12	06 Jun – 18 Jun	13	4
U3	9	6	16 Jul – 17 Jul	2	0
C5	11	26	12 Aug – 22 Aug	11	1
S6	8	24	20 Jul – 29 Jul	10	4
K7	20	133	05 Aug – 28 Sep	55	20
A8	8	7	02 Sep – 04 Sep	3	6
M9	9	62	09 Oct – 18 Oct	10	16
TOTAL	93	356	16 Apr – 18 Oct	154/186 days	66

Figure 2: Distribution of Asian elephants across private lands on the Valparai plateau (blue) and rainforest fragments (dark green). The Indira Gandhi Wildlife Sanctuary (light green), reservoirs (light blue), and surrounding protected areas of Kerala (grey) are also shown. Red denotes areas of higher use. Data from 8 herds (267 locations) are plotted.



6. **Human-elephant conflict:** The nine focal herds during their movements through the Valparai were responsible for 66 incidents of human-elephant conflict, including one death on 24 May, 2002 (second human death due to elephants during the year). Other incidents involved elephants damaging property, raiding public ration stores and school kitchens, eating banana and other plants in vegetable gardens around human settlements, and knocking over shade trees in coffee estates. Monetary losses sustained ranged from less than Rs. 500/- to over Rs. 20,000/- per incident. A full assessment of loss, further monitoring of conflict, as well as compilation of past records is continuing.
7. **Population Structure:** Our data on the age-sex classification of 93 elephants suggests a population sex ratio of 1 adult male: 15.7 adult females (Figure 2).

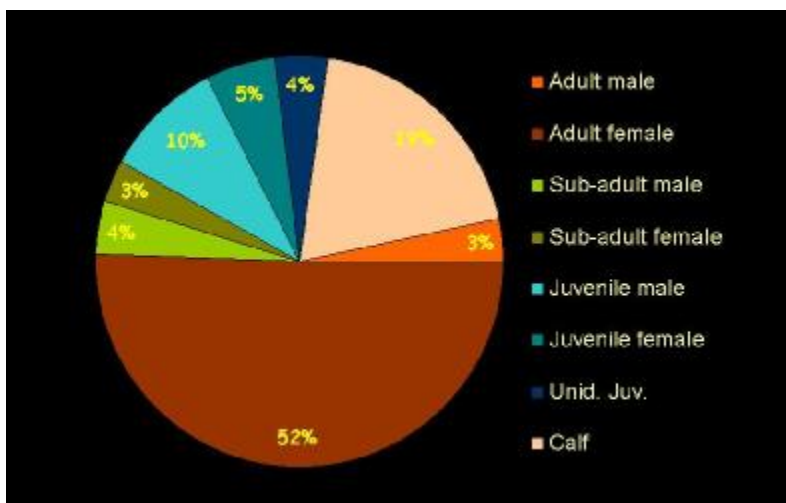


Figure 2: Population structure of Asian elephants on the Valparai plateau, Anamalai hills, Western Ghats, India

8. **Planned activities:** The project is continuing to gather further valuable data on Asian elephant movement and conflict with humans. Along with field surveys the detailed mapping being carried out will help identify important corridors, high-conflict areas, and suggest strategies for conservation and management.

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