MOVEMENTS AND HABITAT UTILIZATION BY ELEPHANTS IN WESTERN UTTAR PRADESH

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INTRODUCTION

- All five population of Asiatic Elephant (Elephas maximus) in India are threatened by the loss and severe degradation of habitat, including it's fragmentation.

- This study focuses on the portion of the north-western population in Rajaji National Park U.P. an area of 840 sq. Kms, comprising three former sanctuaries Chilla, Motichur, and Rajaji astride the Ganges.

- Average rainfall is 150 cm. and the hilly terrain is covered by deciduous forest types, such as Siwalik sal. There is a seasonal scarcity of water.

- In addition to heavy grazing and lopping, habitat quality has been greatly reduced by the construction of a power channel and other development works, seriously impending elephant movements across the Ganges.

OBJECTIVES

- Research, which aims to provide a basis for improved management of this disrupted population, has the following specific objectives:

- Determine the year round movement pattern of elephants in Rajaji N.P. and contigous forest areas.

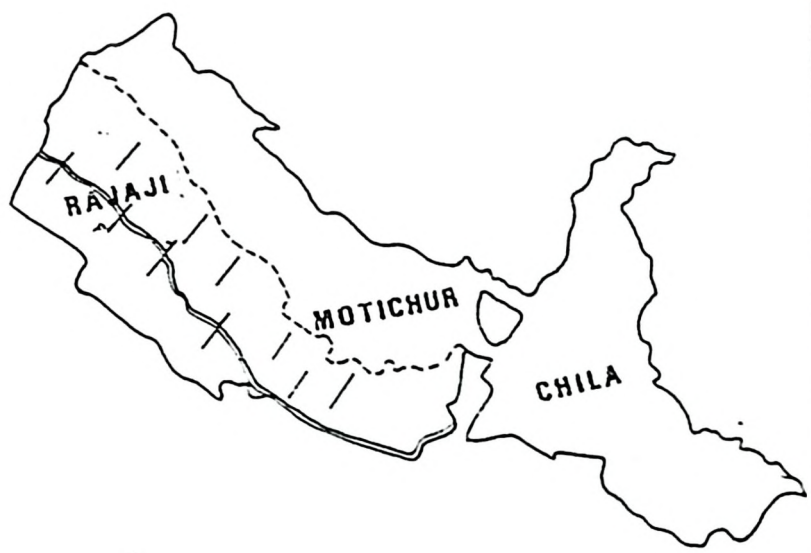
- Assess the effect of forest management practices and human activities, such as cattle grazing and development projects on

(a) elephant movements and

(b) habitat utilization pattern.

- Evaluate key habitat factors (food, water and human disturbances) which influence the seasonal pattern of habitat occupance.

PRESENT DISTRIDUTION OF ELEPHANTS IN INDIA



DISTRIBUTION OF TRANSECTS IN STUDY AREA

GANJARBAN BLOCK - TREES (AS OBTAINED BY PCQ)

Tree Density = 566 trees/ha.

Name of Species	Density per ha.
Mallotus philippensis	111
Lagerstroemia parviflora	60
Ehretia laevis	55
Shorea robusta	53
Dalbergia sissoo	48
Acacia catechu	38
Miliusa velutina	35
Kedia calycina	35
Bauhinia malabarica	18
Ixcxora grandis	15
Casearia tomentosa	13
Zizyphus xylopyra	13
Randia dumentorum	09
Cassia fistula	09
Terminalia belerica	07
Grewia elastica	07
Litsea glutinosa	05
Butea monosperma	02
Salmalia malabarica	02
Emblica officinalis	02

HABITAT STUDIES

- A basic understanding of study area habitat is being sought by:-

- Mapping of broad vegetation types and terrain.

- Estimation of density and species composition of trees and shrubs by point centred quarter (P.C.Q.) transects in each forest block.

- Mapping of seasonal water availability.

- Recording of disturbance factors, including human settlements, cattle densities, frequency of grazing and lopping.

- Specimen of results are illustrated.

MOVEMENTS

- Information is obtained by direct and indirect methods.

- Individuals identified by either morphological characters (see Diag.) or Radio-collars provide information on movements and seasonal range.

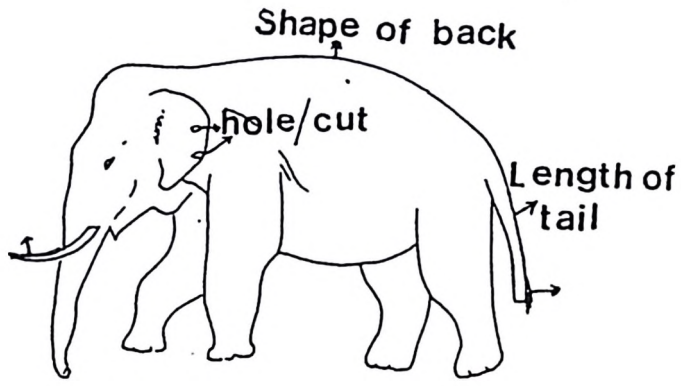
- Information on habitat occupance is obtained from

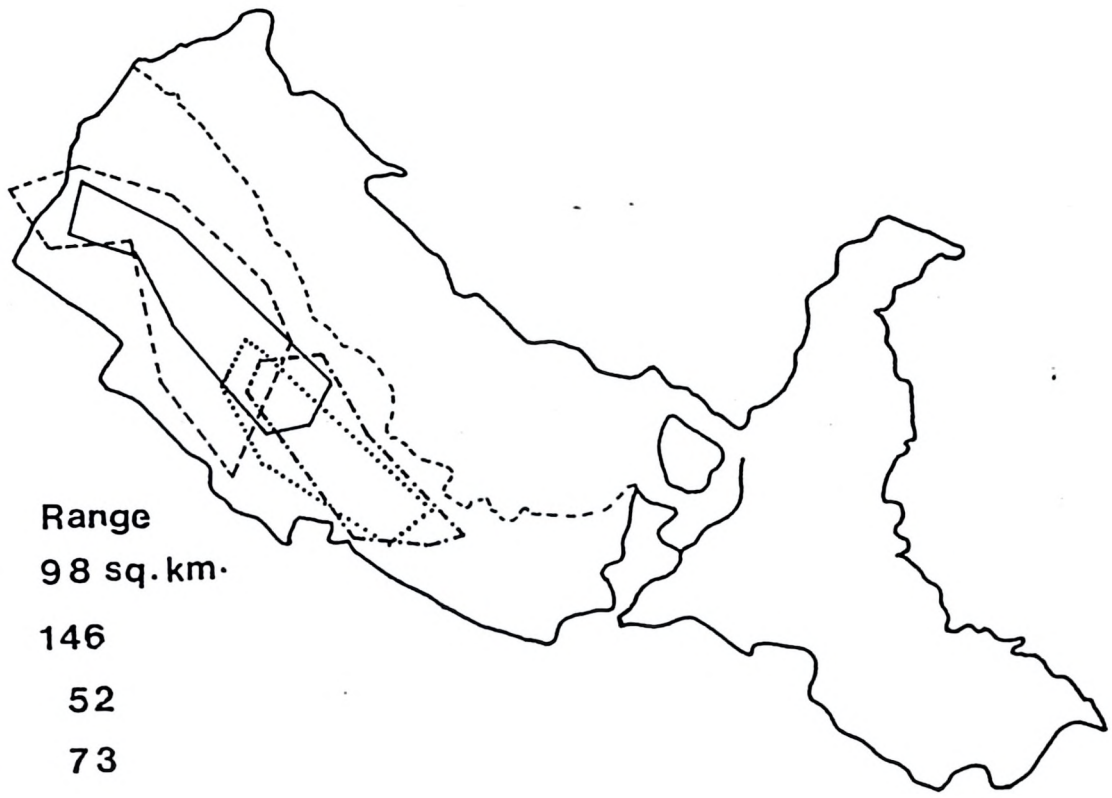
(i) Direct observations of elephants,

(ii) By indirect evidences (Feeding signs and dung) recorded monthly from fixed transects (see map), and

(iii) Dung counting in dry river beds,(except monsoon).

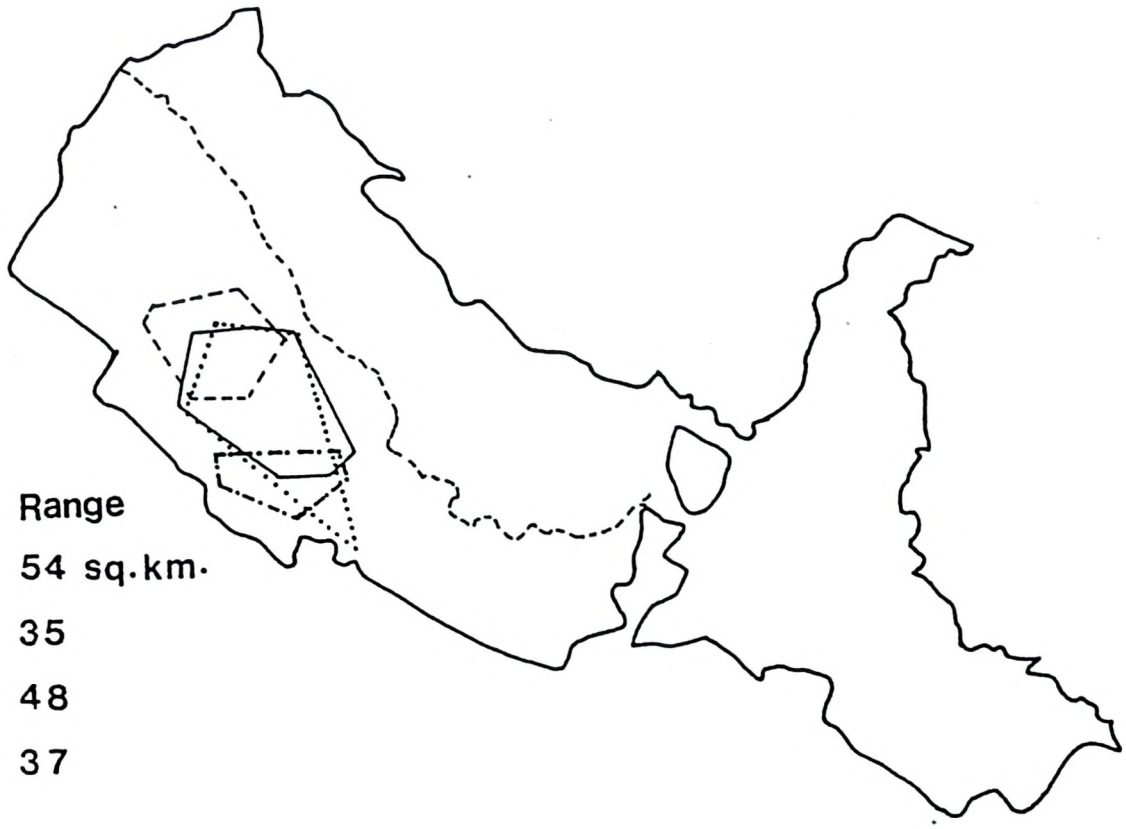
- Preliminary information from fixed transects and river bed dung counts is summarized in map 3 showing relative habitat occupance.





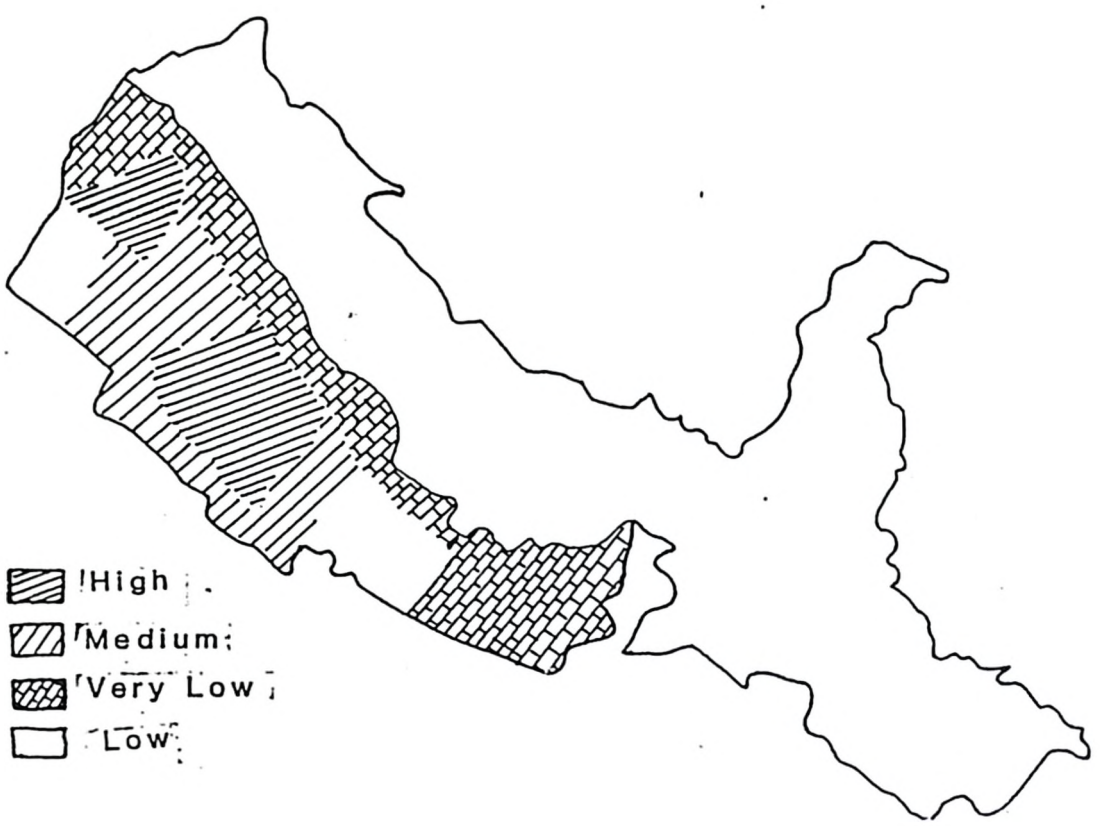
Season	Range
Winter	98 sq.km.
Summer	146
Monsoon	52
Post monsoon	73

1. Seasonal ranges of a radio-collared male



Code No.	Range
MT-1	54 sq.km.
S-1	35
DG-1	48
GP-1	37

2. Home ranges of four identified bulls



3. Relative habitat occupance by elephants

HABITAT UTILISATION

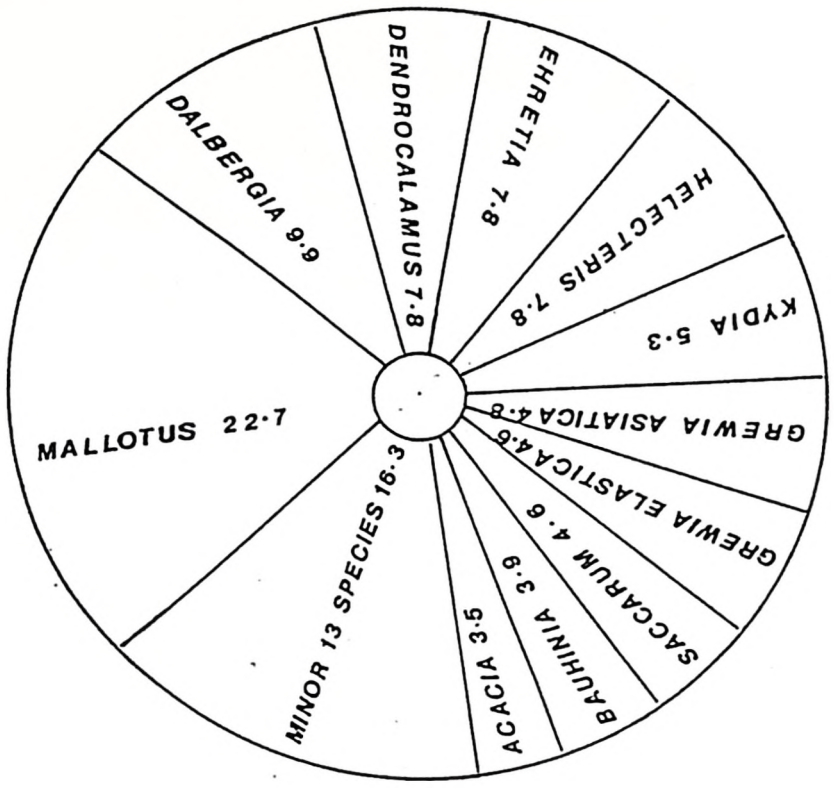
FEEDING STUDIES

- By recording numbers of direct observation of foraging per plant species and plant parts (leaf and branch, bark and roots).

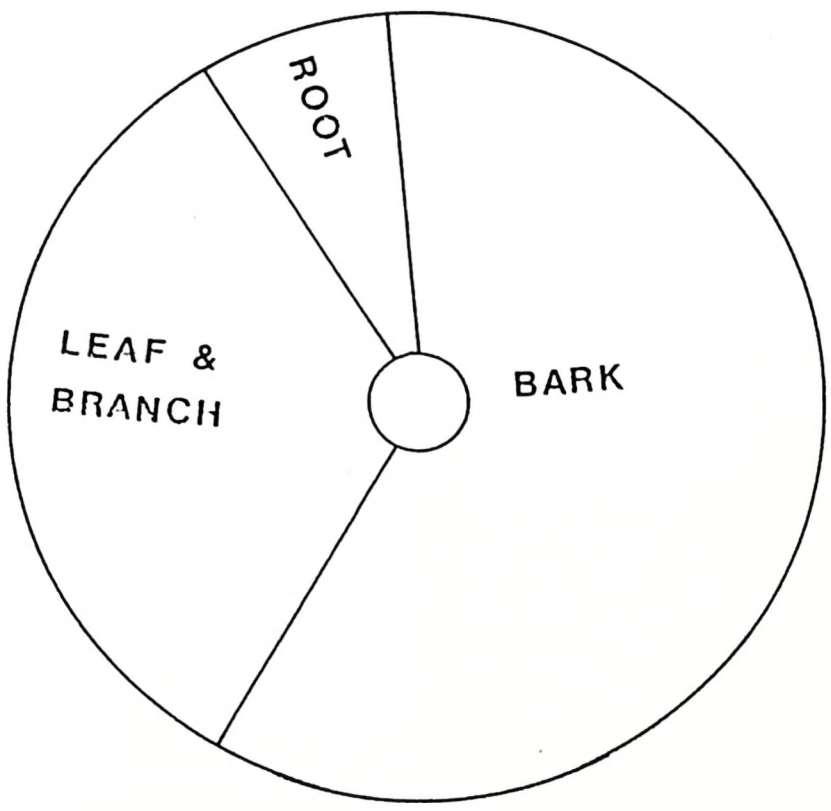
- Indirect information is also obtained on feeding via fixed transects.

USE OF WATER

- Observation of drinking and wallowing are recorded and data will be examined by time of day and seasons.



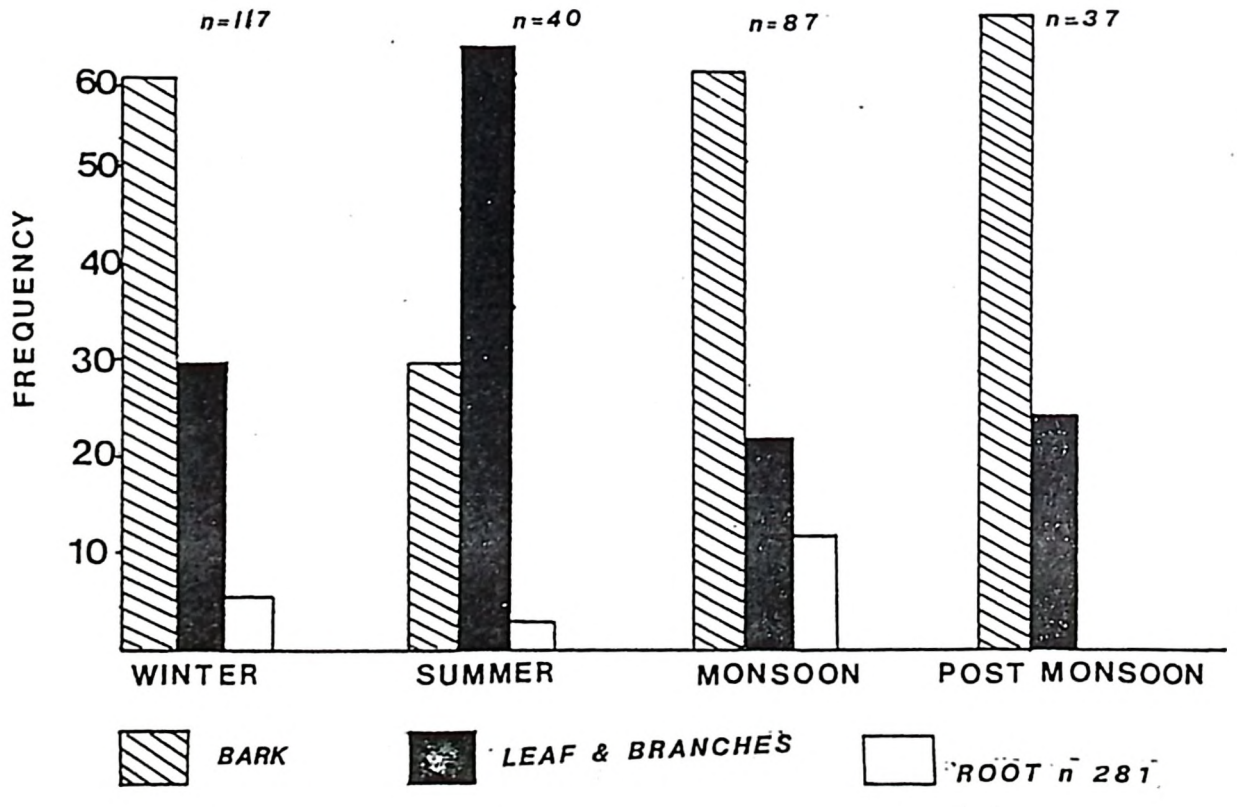
Frequency of plant species foraged n 281



Foraging frequency of plant parts

SEASONAL FREQUENCY OF MAJOR PLANTS FORAGED

Sl. No.	Name of species	Percentage of occurrence in Forage			
		Winter n=117	Summer n=40	Monsoon n=87	Post Monsoon n=37
1.	Mallotus philippensis	26.4	30.5	16.0	17.6
2.	Ehretia laevis	08.5	13.8	09.1	Nil
3.	Grewia elastica	06.8	Nil	Nil	Nil
4.	Kydia calycina	06.8	Nil	08.0	Nil
5.	Bauhina purpurea	06.8	Nil	Nil	Nil
6.	Saccarum Spp.	05.9	Nil	13.7	Nil
7.	Helicteris isora	05.1	13.8	Nil	17.6
8.	Acacia catechu	05.1	Nil	Nil	Nil
9.	Dalbergia sissoo	Nil	05.5	17.5	11.7
10.	Grewia asiatica	Nil	05.5	17.5	11.7
11.	Bauhinia malabarica	Nil	05.5	Nil	Nil
12.	Dendrocalamus strictus	Nil	Nil	10.3	29.4



Seasonal frequency of plant parts foraged

LOST IN THE RAINFOREST

In June 1988, I had been to the Kalakadu Wildlife Sanctuary in Tamil Nadu to trek from Netteri Dam in the Sanctuary to Muthukuzhivayal a cardamom plantation, in Upper Kothayar Reserve Forest in Kanyakumari district. There is a proposal to annex this forest with the Sanctuary. These forest areas would become part of the proposed Kalakadu-Mundanthurai Tiger Reserve, the seventeenth Tiger Reserve in the country. The Government of India has issued a notification to this effect in April,1988. When I worked in these hills during 1982-84 I never had the chance to trek along this route, which is used largely by cane-poachers, although I have covered other parts of the proposed Tiger Reserve.

While going on such a trek one has to inform the local forest officers well in advance to find a suitable guide to take you through the area. This, I did and the response of the forest department was cordial and immediate. In fact when I reached Netteri dam (altitude,4500') after trekking through 12 kms of primordial rainforest with two of my local naturalist friends, I found the guide and two forest guards waiting for us. The guide told me that he had worked in this area 15 years ago! The guards were completely new to the area! The time was 1100 hrs and the guards were instructed by their Range Forest Officer to leave me in Muthukuzhivayal and come back to Netteri, where there is a dilapidated Forest Rest House, by the same evening. The RFO had no idea about the forest through which we had to walk!

We started walking at 1130 hrs. Till 1700 hrs, although it was drizzling incessantly, there was rapid progress through dense patches of reeds (Ochlandra travancorica) and rainforests along and across streams and elephant trails. In several places there were gaur and mouse deer tracks. Giant squirrels and Nilgiri langurs frequently flitted through the dense canopy. Near a stream bed leopard and tiger pugmarks were also seen. In one place an elephant stood feeding amidst the reeds hardly 15 m from the path. We tiptoed past the elephant. One of my naturalist friends, Mr Albert Rajendran, who has been studying pit-vipers of this area, could even locate a short nosed vine snake (Dryophis dispar) and a green pit viper (Trimeresurus macrolepis). In one place we found a comfortable grass hut built by cane smugglers. As our attempts to burn it did not succeed, we pulled it down.

I think the guide made the mistake of selecting the wrong path around 1730 hrs. At 1830 hrs we realized that we were still far from any human habitation. The drizzle continued, leeches crawled up our feet and darkness started shrouding the forest. The guide confessed he was lost.

There was only one option left for us. To halt in the middle of the wet forest would have been suicidal as the leeches would have drained our blood to the last drop. I led the way down to a valley where we had been hearing a river rumbling. Fortunately, as visibility was just fading, we came upon a flat rock in the middle of the river, wetter and colder than the forest floor, but free from leeches. The guards and the guide tried to build up a fire using the newspaper, which we had wrapped around the two loaves of bread, and dry reeds. The wetness of the wood did not succumb to the small fire we had built.

We were not prepared for the night halt in such a place. After sharing the bread and drinking from the river we went to sleep on the wet

rock. I slept from 2000 to 2200 hrs, and thereafter the cold and the constant drizzle did not allow me to sleep. The same was the case with the others.

With the first light of dawn, we packed up our wet belongings, and went up to the place from where we had descended into the valley the previous evening. After two hours of climbing, slipping down and crawling through bushes I picked up an old trail, along which someone had passed cutting saplings, probably a year ago. Now the trek became much easier and after half an hour we entered a cardamom plantation. After talking to the people at the plantation we realized that we were several kilometers from Muthukuzhivayal, our destination and the nearest bus stop was 15 kms away. This did not bother us as the caretaker of the plantation kindly came forward to give us a place to wash and a much needed warm rice meal.

Later as we walked towards the bus stop I looked back at the magnificent forest where we had spent a sleepless night. I was happy that one day these forests would come under the umbrella of Project Tiger, which would further enhance its protection and conserve it for posterity. But a question which made me uneasy repeatedly arose in my mind. How are we going to effectively patrol areas such as the one I walked through, if we don't have proper guides to take Forest Department staff who may be completely new to such areas.

One way of ensuring an effective guide system in an area is to appoint local tribals as guides. Tribals know their area in and out. Mundanthurai has a tribe known as Kanis who are very good in junglecraft. Possibly when Kalakadu-Mundanthurai becomes a Project Tiger area the Forest Department will be in a position to appoint Kani guides to assist Forest staff to perambulate remote areas which otherwise would remain unknown and would attract illegal activities.

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