

PROJECT ELEPHANT (Gajatme)



MINISTRY OF ENVIRONMENT & FORESTS GOVERNMENT OF INDIA

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मंत्री पर्यावरण एवं वन भारत MINISTER ENVIRONMENT & FORESTS INDIA

FOREWORD

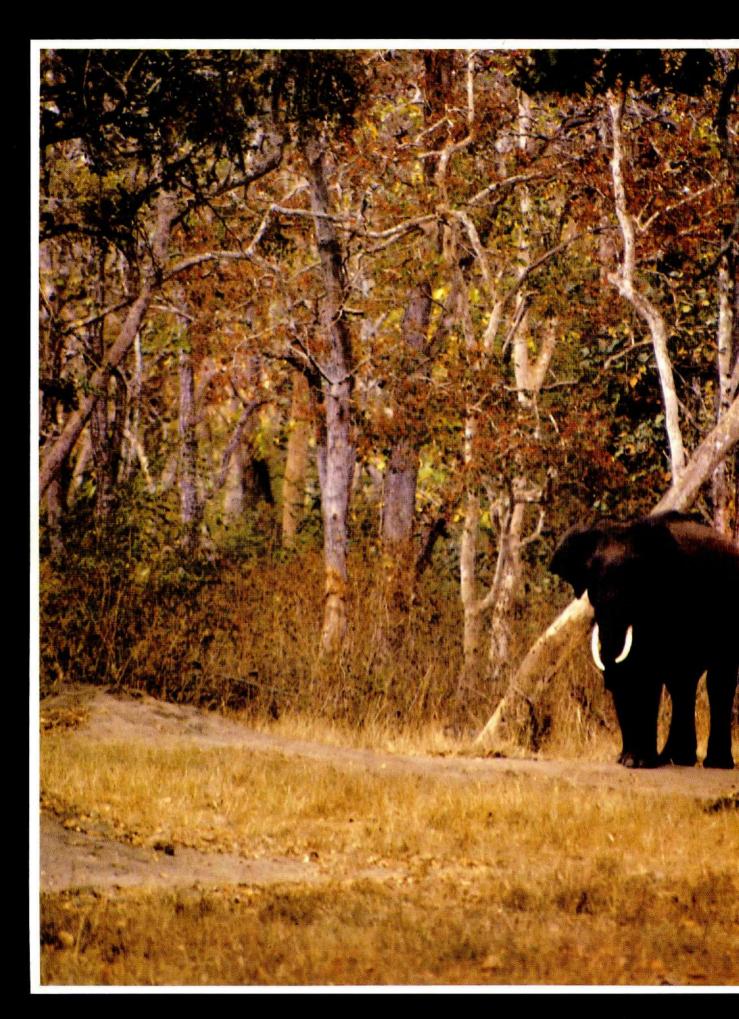
Since time immemorial the elephant has been an integral part of Indian culture. One cannot imagine India without the elephant. Over the years, shrinkage and fragmentation of the elephant habitat, and the mounting stress due to increasing human and cattle populations has cast a threatening shadow upon this magnificent lord of the forests.

Government of India, in collaboration with the State Governments, has launched a major conservation effort aimed at preserving the gene pool of this unique species and its natural habitats. Project Elephant, or "Gajatme", as the conservation effort has been aptly named, endeavours to achieve a better understanding of the needs of our wildlife heritage in general and a peaceful co-existence between man and the elephant in particular.

I am happy to present this publication of my Ministry and hope that it will add to public awareness of the Project and the need to effectively integrate conservation ethics with human requirements.

(KAMAL NATH)

New Delhi, 17th February, 1993.





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Can you imagine India without an Elephant?...

INTRODUCTION



The preferred habitat

Tlephant (Elephas maximus) more familiarly known as GAJARAJ is the largest terrestri-→al mammal of India. It is inextricably linked with our history and lore for centuries and has retained its status as a special species whether in the wild or in captivity and is considered a symbol of fertility, wealth and abundance. The legend that elephant took birth from the celestial waters paved the way for its association with "Sri" the goddess of abundance. "Sri" the goddess of earth, for the first time appears in "Sri Sukta" of the Rigveda. There she is the great mother of all creatures including animals, spouse of Vishnu and supreme deity of the universes. She is said to have arisen from the lotus and delights in the sound of elephants. In the Indian tradition clouds were often identified with elephants, the word 'Naga' having both meanings. Thus, clouds or elephants bring wealth and prosperity (Sri) in the form of crops in the fields.

The close association of the rains/water with elephant in the mythology, appears to have arisen from the fact that because of the huge size of the animal and the herd structure, the requirement of both food and water by elephants is very high and

the elephant populations can be supported only by the forests that are under optimal conditions. The status of the elephant is a good indicator of the health of the habitat. A habitat which is good for elephant is also good not only for its associate species like sambhar, cheetal, kakar but also for the predators like panther and tigers. The habitat will also have to be flora rich to support animal bio-diversity. When the forest is good for all these animals, the eco-system is in good condition which means the water regime is right and so also the condition of the soil.

Because the elephant requires much larger home range than any other terrestrial animal, it is usually one of the first species to suffer the consequences of habitat fragmentation and destruction. The historical and present day distribution of the elephant in the Indian sub-continent is in many ways a record of the progressive deterioration of the environment in the sub-continent. Since 100 A.D., there has been a progressive desiccation of Northern India and the west Gangetic plain in India, most part of which was also habitat of elephants. Whether this deterioration is all man-made may be open to question but there ought to be a total unanimity about the need of prevention of further degradation of the elephant and the allied species and thereby preserving the quality of soil, water regime and other life supporting processes in nature.

The Asian Elephant (*Elephas maximus*) and its African cousin (*Loxodonta africana*) have evolved over a period of 55 million years from certain proboscidians in Africa. While the African Elephant is believed to have migrated in pre-historic times throughout the African continents, the Asian Elephants evolved in Africa and later

migrated to Eurasia. The Asian Elephants and the African Elephants both possess a mixture of specialised and generalised character which have enabled these species to adapt to an ever-changing environment, whereas those species which were

much more specialised like the Mammoth, were doomed to extinction.

However, the Asian elephant and the African elephant both are seriously threatened today and there is growing concern to safeguard against further decline in the status of the two species. India has the largest surviving population of the Asian elephants. The conservation efforts in this country are, therefore, of utmost importance for survival of this magnificant pachyderm which, in spite of being much loved and respected, is greatly threatened today due to rapid degradation of its habitat both in quality and quantity. The instances of man and animal conflict are on the rise.

As for the species itself, Project Elephant aims at management of the species as a whole, both

"Because the elephant requires



Human depredation of Elephant habitat

within the demarcated protection areas and outside, in the wild as well as in the captivity; and of trade in line animals and animal products such as ivory, a concept which extends the scope of conservation efforts beyond areas demarcated for the protection of wild life.

To ensure the long-term survival of identified elephant populations, the project proposes to establish Elephant Reserves to protect and manage as much of the range of these populations as possible. Range Protection & Management, therefore, is the key concept of Elephant Project.

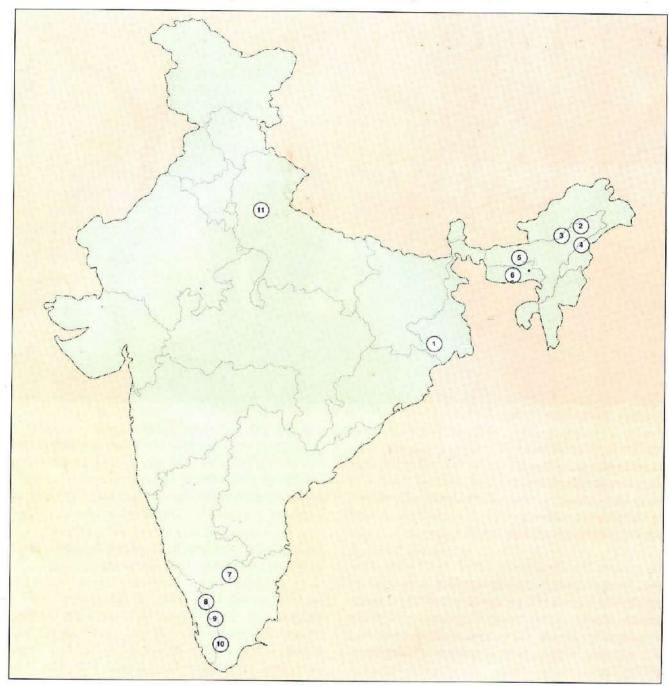
The management of these reserves will throw up new challenges. Accommodation, rather than protection, will be the guiding principle here. The main thrust will be at protection of crucial areas within an elephant range, improvement of the quality of the habitat, combined with accommodation of the socio-economic needs of the people using these forests, particularly those living in the fringes or with in the range itself.

Protection of corridors will play an important role in maintaining the variability of elephant ranges & preventing their fragmentation – a major threat to elephant ranges and therefore to elephant population themselves.

Tackling the problem of elephant depredation is another major task before the project.

In 1990 a task force was set up to work out a strategy for the purpose, and based on the recommendations of this task force a centrally sponsored scheme "PROJECT ELEPHANT" was launched in the Financial year 1991-92. It is hoped that the initiative taken by the central government will produce the desired results and help in ensuring the long term survival of the species with all the biodiversity of its habitat – the tropical forest ecosystem, which is under severe pressure and threat not only in India but all over the world. Here is the global significance of India's efforts.

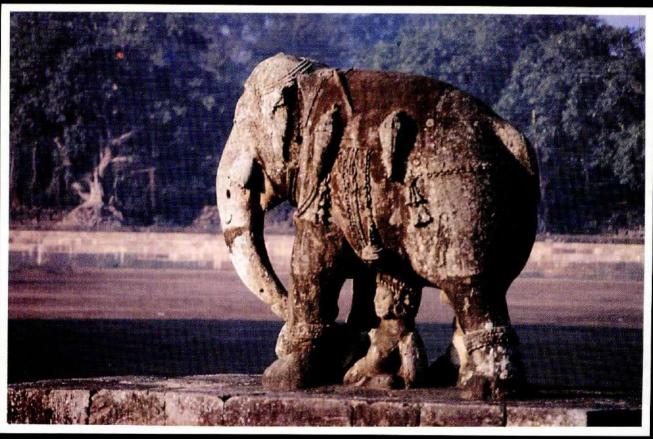
Elephant Reserves of India



- 1. South-West Bengal North Bihar Orissa
- 2. Kameng Sonitpur Inter state (Arunachal/Assam)
- 3. Dibru-Deomali Interstate (Arunachal/Assam)
- Kaziranga-Karbelong-Intanki (Assam/Nagaland)
- 5. Barial-Saifung Interstate (Assam/Meghalaya)

- Balphakram National Park & adjoining area (Meghalaya)
- Nilgiris & Eastern Ghats (TN/Kerala/AP, Karnataka)
- 8. Nilambur Silent Valley Coimbatore (TN/Kerala)
- 9. Annamalai-Parambikulam (TN/Kerala)
- 10. Periyar Madurai (Kerala/TN)
- 11. Rajaji-Carbett (U.P.)

ELEPHANT IN INDIA'S TRADITION AND HISTORY



Elephant sculpture in Konark (Orissa)

The evidence of a number of seals seems to indicate that the captive elephants could have been known in India as early as the Harappan Civilisation (about 2,500 - 1,500 B.C.). It is, however, the Vedas which are our earliest recorded source of trained elephants in India (the earliest Vedas are dated usually around 1,500 B.C.)

Jataka stories of the Buddha's former births make up the most complete surviving collection of folklore in any literature of the world. The older Pali Jatakas provide us with an insight into the status of the elephant in eastern India (northern Bihar) during the period of the republics before the emergence of the Maurya Empire with Chandragupta Maurya (600 - 321 B.C.).

The two great Indian epics, the Ramayana and the Mahabharata, probably describe Indian society of 1000-700 B.C. Both the epics abound in references to elephants in the life of the people, in peace, and in war. Elephants rather than chariots had become the royal mount by the 4th century B.C. latest, if not much earlier. 'Chaturang Bal' (four-armed forces consisting of chariots, elephants, cavalry, and infantry) is a standard description of a large army in both the epics.

One of the first historical accounts of an army with elephants, suffering a decisive defeat is that of the famous battle in 326 B.C.between Alexander the Great, and the army of Porus on the bank of the Jhelum. This apparently did not decrease the passion of the kings for possession of war elephants - the use of the elephants in war spread to the West and the elephant arm of the army continued to thrive in the Indian subcontinent for another 20 centuries. The army of Chandragupta Maurya had 9,000 elephants; other rulers in the Indian subcontinent at that time had between them at least another 5,000. It is not surprising that during the reign of his grandson, emperor Ashoka (268-31 B.C.), the elephant became the symbol not only of Ashoka but also of Buddhism.

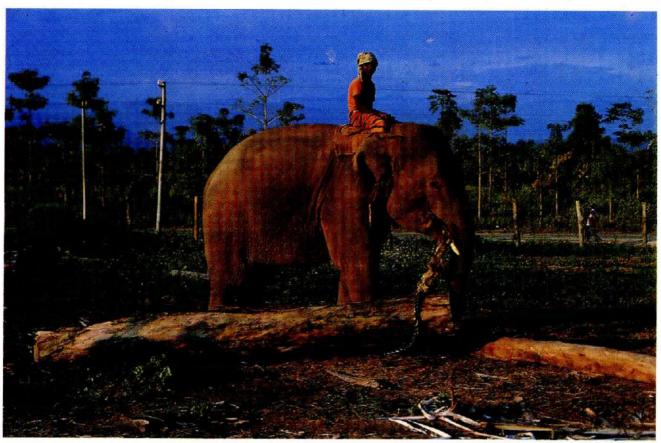
Ancient Tamil literature of the Sangam period

(1st to 3rd century A.D.) offers a wealth of information about elephants and shows elephants as a part of culture and way of life of the ancient Tamils. "Nigandu", the old poetical lexicon, has 44 names for the elephant species, and four separate names for elephant calves. Each part of an elephant's body is separately named. There are also indications that domestication of elephants was indigenous to India, and the Aryans picked it up in the process of assimilating the culture of a country they had over run. There are many references too to the training of elephants. Tamil Nadu Ahananooru in verse 13 says: "The Pandyan hero Panni catches elephants using pits and after training them to understand commands, gifts them to mendicants who beg for them."

Kalidasa (about 400 A.D.), perhaps the greatest poet of the Golden or Classical age of the Imperial Guptas, makes very interesting observations on wild as well as domesticated elephants in "Raghuvamsham", "Kumarasam-bhavam", and his play "Abhijnanashakun-talam" where he describes elephants as debarking trees and occasionally as depredator of secluded human settlements in forests (ashramas).

Bana's Harsha-Charita (7th century A.D.) describes the entrance to the royal camp of King Harsha-vardhana of Kanauj in northern India (A.D. 606-47) as "dark with congregation of elephants; some for tying up with silk ropes-presumably this means for use at court; some for carrying trumpets; some freshly captured; some received as revenue; some received as gratis; some to satisfy the emperor's curiosity to have the first look; some sent by the Chief of the nagabana elephant forests; some borrowed for elephant fights and games; some as gifts to be sent with ambassadors." The passage offers a remarkable overview of various uses the elephants were put to in this period.

We have to turn to the South, however, for the most impressive visual account of elephants in the rock-cut works of the Pallava dynasty (A.D. 600-740) and later in the temple sculpture and base relief of the Hoysala period (A.D. 1110-1138), as well as in the sculptures and reliefs of the temples of Orissa.



In the service of man

The Turkish Empire began in India with Prithvi Raj losing the 2nd battle of Tarai (1192) when he changed his elephant for a horse. When Timur invaded Delhi (1398), the main fear of the Turkish soldiers was the widelyreputed ferocity and power of the Indian war elephants. Ibrahim Lodi's army facing Babur in the first battle of Panipat (1526) reportedly had a thousand war elephants. Superior arms including fire-power and good war techniques earned Babur his victory, and thus ended the Turkish empire in India and began the Mughal era. Large-scale use of elephants in war continued during the Mughal period. Sher Shah, the Afgan, who became the master of India for a time after putting Babur's son, Humayun, to flight had in his army 5,000 war elephants. In the second battle of Panipat in 1556, (which won the throne of Delhi for Humayun's son, Akbar) Hemu, the minister of the Afgan Chief, Adil Shah, opposing Akbar had 500 war elephants protected by plate armour. Famous elephants were used by both the warring sides in the historic battle of

Haldighat (1576) between Akbar and Maharana Pratap of Mewar. The last Hindu bastion in India fell with the shattering of the great Vijaynagar empire after its defeat in the battle of Talikota (1565), despite the employment of a huge number of elephants. Elephants again played a major role in the last Mughal-Pathan battle in eastern Bengal (1612). During the war for the imperial crown in 1658 - 59 between the sons of the aged emperor Shah Jahan, the princes were mounted on elephants in every battle. The heir apparent, Prince Dara lost the battle of Samugarh (1658) to his two younger brothers Murad Baksh and Aurangazib, when at the last stage of the battle Dara's elephant became the object of concentrated attack, Dara changed to a horse. Seeing the howdah empty Dara's soldiers concluded that he had fallen and started fleeing which soon turned into a general rout. Elephants continued to be the royal or commander's mount in battle throughout the first half of the eighteenth century, often a source of embarrassment as they presented conspicuous targets to

steadily improving accuracy and power of musket fire: this is the story during the scramble for the imperial crown after Aurangazib's death (1707) and all the three major battles fought by the Nizam of Hyderabad during this period (Ratanpur, 1720; Ballarpur, 1720; and Shaker Khera, 1724 - the last three great battled with elephants).

Before moving beyond the Mughal era, it must be recorded that the Mughals prized elephants and used them extensively in war and state pomp. Akbar's (A.D. 1556 - 1605) great love for this animal, its place at the court and in the army have been meticulously recorded by Akbar's friend and court historian Abu'l Fazl. An eleborate system of management was devised for the imperial elephant stables, which in Akbar's time had 32,000 elephants, and during the reign of his son Emperor

Jahangir, another great connoisseur of elephants, there were 1,30,000 elephants.

By the late eighteenth century improved accuracy and power of musket fire along with the use of mobile cannons had reduced the importance of ele-

phants as a striking force, and had pushed them back from the frontlines to the commissariat. The main use of elephants during the period of the British Raj was in state pomp, as status symbol by princes and the landed gentry, and the great shikar meets organised during the period, a practice which continued right upto the 1930s, when the second World War put an end to this form of revelry. Elephants were pressed into active service once again when the Japanese sweeping across South East Asia and Burma were pressing against the north-eastern border of India. all elephants in private ownership in that region were requisitioned by the government and put into military service in the difficult hilly and marshy terrain of North-East India.

The history of elephants during the British

Raj will remain incomplete without the mention of A.J.W. Milroy who, realizing the debilitating, effects of prolonged incarceration of recently captured animals, introduced a code which insisted that elephants should be removed from the stockade within a short period, and the initial training should be humane and completed within a short time to minimise the rate of casualties during the period of capture and training.

In present-day India, large-scale demands for elephants come from the logging industry in remote forest areas, for use as status symbols in Hindu temples, and from government departments of forests and tourism. The elephant survives despite all odds - respected, worshipped and loved in captivity; deferentially treated and feared in the wild; still in demand by man.

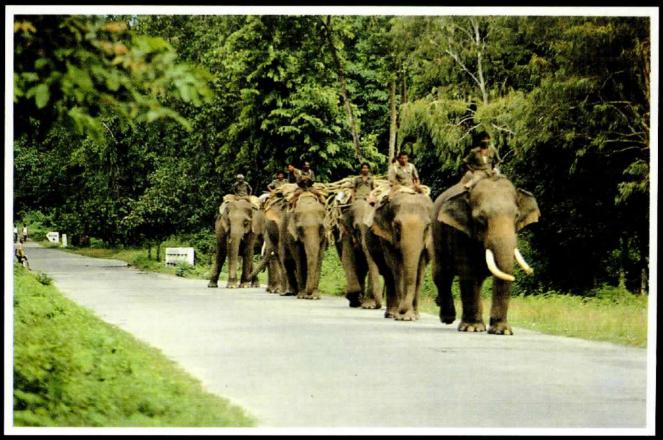
"Elephants have always been so much a part of India's myths, history, and cultural heritage that protecting and ensuring the survival of this animal means much more to an Indian than protecting just another endangered species"

Elephants have always been so much a part of India's myths, history, and cultural heritage that protecting and ensuring the survival of this animal means much more to an Indian than protecting just another endangered

species - it is more like protecting a magnificent presence which has come to symbolise India.

Although the merger of the states with the Indian Union and abolition of Zamindari have affected the demand for elephants, the Sonepur Mela which is the largest elephant fair in India at the confluence of Gandak river with the Ganges used to attract more than thousands of elephants till early sixties. Now hardly 150 to 200 Elephants come there. Most of them return without being transacted. Price of elephant varies between Rupee one to two lakh each, depending upon age, size, sex and quality. Good female elephant of proper size and age has become a rare commodity in recent years.

ELEPHANT — A COMPASSIONATE FRIEND



Marching splendour

In India, the animal is in so much association with the local mythology, tradition, culture, art and literature that to most people, particularly to those from the West, the elephant and India are inseparable.

The noble elephant was considered a friend of man in many ways because of its great qualities

which are rare in men. The huge size of the animal, the peculiar body formation and the high degree of intelligence displayed by it in captivity have made this animal a symbol of pageantry, glamour and utilitarianism. There is also a

legend that the primodial elephant had wings and four tusks. One day, after flying through air, the elephants while alighting on a banyan tree in the northern quarter of Himalayas; broke off the branch that fell on a hermitage place of "Dirghtapas". There upon the angry sage cursed them and they lost the powers of supernatural locomotion and the two tusks and were banished to earth. To overcome the distress of the kin folks of the Dig-gajas, Brahma agreed to create a sage who would be fond of elephants and thus, Palakapya was marvellously born. The sage lived in Assam in the 5th or 6th

Century B.C. He lived and wandered with the wild elephants eating only the food they ate; he learnt all about the ailments that affected them and is reputed to be the author of Hasty ayurveda, a treatise on medical treatment of elephant and the

"Matanglila" which is a treatise on the physical as well as mental characteristics of elephants, and catching and up-keep of elephants" The two treatises are supposed to be composed of the dialogues between the sage Palakapaya and

"The "Arthasastra", while recommending that elephants are to be eliminated from the river valleys under settlement, prescribes total preservation of elephants in outer hill forests"



Dragging a wild rogue

the King Romapada of Angdesh who chained the elephants on the slope of Himalayas as they became a menace to Rishis and threat to the cultivated crops.

The first capture of the wild elephant in India may perhaps be attributed to the King Romapada of "Angdesh" which is believed to be a part of Bihar State, which has been the land of elephants and their traditions. As narrated by Palakapaya, the first elephant born was Airawata. This was followed by seven males and eight females constituting eight pair of elephants of the quarters of Purana "Dig-gaja". It is significant that below the eight dig-gajas, an Ashta dig gajas was also the appellation of the Court Scholars and savants in the Empire of Vijay Nagar.

Vedic literature also confirms that by the 6th Century B.C., the art of taming and catching elephants had become quite a refined one and even the Kings like Udyan acquired fame for knowledge of this art. Like other matters of importance in the Royal Courts of the Indian Kings elephantology was considered

as a branch of 'Arthasastra', the Science of State craft or Government. Thus, in the 'Kautilya's "Arthasastra", there is a reference to the duty of the overseer of elephants to take care of training of elephants. The "Arthasastra", while recommending that elephants are to be eliminated from the river valleys under settlement, prescribes total preservation of elephants in outer hill forests. It also recommends setting up of elephant sanctuaries on the periphery of the Kingdoms, which were to be patrolled by guards.

Anyone killing an elephant within the sanctuary was to be put to death. Interestingly, the "Arthasastra" also instructed that elephants calves, elephant's with small tusks, tuskless males, diseased elephants, female elephants with their young and suckling females were

not to be captured but a 20 year old elephant should be captured. This effectively meant that only adult male-tuskers could be captured; in a sense the most prudent way of harvesting the elephants. As mentioned earlier, the Ashokan edicts talk of even the setting up of hospitals for treatment of Animals including elephants.

The Kalsi edict of Ashoka has on its eastern portion a figure of elephant with words "Gajatme" inscribed between its legs. Gajatme means the King of Elephants and perhaps, points out towards the descent of the white elephant from the sky for incarnation as Gautama Buddha. This early description has been adopted as the Code-word for Project Elephant itself. In peninsular India the "Tamil Sangam" litera-

ture is replete with reference to elephants both wild and domesticated. Some hill tribes in South certainly hunted elephants for its meat and ivory but the Ganesh Worship that reached Tamil land perhaps during the Pallawa regime in the Seventh Century A.D. reinforced the strong ethos against killing of ele-

phants. There are also references to taming of elephants by man in the Samgam literature.

In India, elephant has been used as a symbol of majesty, power and dignity. Foreign observers were quick to appreciate not only the fighting qualities of Indian elephant but also its intelligence and human behaviour. The classical historian Arrin (2nd Century AD) appreciated Indian elephant in following words "Some of them are known to have taken up their riders when slain in the battle and carried them for burial; others have covered them when lying on the ground with a shield; and still others have borne the brunt of the battle in their defence when fallen. There was one even that died of remorse and despair because it had killed its rider in a fit of rage."

"Some of them are known to have taken up their riders when slain in the battle and carried them for burial; others have covered them when lying on the ground with a shield; and others have borne the brunt of the battle in their defence when fallen"

Indian elephant is also famous for its long memory and extraordinary intelligence. Major F.G. Alexander has quoted one such example one mahout left his child on the bank of river Narmada with his tamed elephant and spoke to the elephant in Hindustani "Brother I am going to cook my dinner, look after the baba, and see that he does not get near the river". With that he placed the child between the elephant trunk and forefeet, and went off to the river bed to cook his food. Several times the child tried to escape, but the recumbent elephant gently curled its trunk around the child and drew him back to where his father had left him. The father continued his cooking and appeared to have absolute confidence that the child was in safe custody.

P.D. Stracey in his book "Elephant Gold" has reported the much published case of an ele-

phant's sagacity resulting a cat being saved from death.

On the West coast of India during the celebration of a Hindu festival, a large tusker refused to lower a pole into the dug pit inspite of all the commands

and persuations of mahout because a black cat was cowering at the bottom of the pit. Not only that, the elephant even lifted the cat out of the hole at the command of the rider and then put the pole in the pit.

The story of the elephant Chandrashekharan carrying a stone, by which he was hurt by a boy, for 40 years, till he could trace the accused and take his revenge also is well known. Apart from their intelligence, the elephants can display most astonishing aptitude in carrying out the assigned task with great precision. They put aside the branches and creepers when going through the jungle with persons on their back and pick up articles dropped by their riders. The elephants perform these tasks auto-

matically or with little urging. Most of the elephants if trained appropriately at proper age can acquire amazing virtuosity.

There are many other instances of the most remarkable interactions and services of the tame elephants, even without the guidance or instructions of mahouts. Kidangur Kantanhoran, Vaikom Thiruneelkantan (1886), Konni Kochayyappan (1911), Avanamanckal Gopalan (1904), Kottarakara Chandrashekharan (1852), Aranmula Valiya, Balkrishnan, Pandalam Neelkantan (1905), Thiruvattattadi Kesawan (1746) were a few among the well known Kerala elephants, whose marvellous affection, intelligence, memory and services caused recording of their names in the Travancore State.

The Elephant-Man relationship has been

extremely good in most part of the country due to unlimited human compassion and tolerance towards this enormous pachyderm and vice-versa. Even during the current times, when the depredation by elephants often results in

great loss of property and human life, the local people by and large, do not have any wrath against the marauders and often find justification for the destruction of the life and property by blaming themselves for the sins and wrongdoings which may have brought forth the wrath of Elephant-God. There are occasions when people attribute all good omens and even onset of good monsoons to the presence of elephants in their neighbourhood. This excellent human elephant relationship should not be allowed to be frittered away and the miseries of the people should be mitigated expeditiously while conserving the animal and its habitat.

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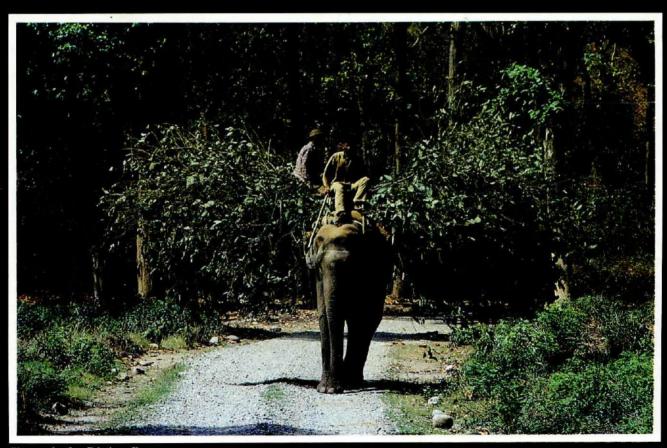
part of the country due to unlimited

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and vice-versa"

MAHOUT — ELEPHANT RELATIONSHIP



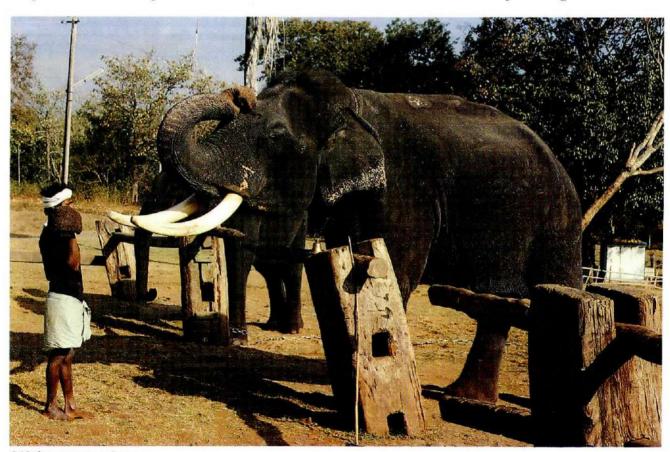
Towards the Dining Post

ahouts (or Mahawats), a unique human institution from the time when the pastoral and agricultural man found that the elephants can be domesticated and used to carry out various tasks, have evolved as a class in themselves. The art of handling and training elephants can only be learnt by a long apprenticeship and is usually passed on from one generation to another as a family tradition. The training and performance of an elephant is tied up with the dedication of its keeper, for, without that devotion to its charge, a mahout can never bring out the best in it or earn its trust and respect. In a sense mahouts are born with an instinctive affinity towards elephants. They are drawn to elephants as though by a magnet. That is how this man - elephant relationship came to be a great tradition in this country.

Elephantology which comprises the science regarding various aspects of physiology and health of the elephant and the art of handling elephants in a compassionate and humane manner, has been a part of statemanship over the years. There is evidence to show that even the Chief Officers of erstwhile rulers knew this part of elephant science well. Kuchubutty, the Chief Elephant Officer of Dharmaraja, the king of Travancore is reported to have ridden a new capture all the way from Cochin boundary to Kottarakkara after mounting it by jumping.

Of all the domestic animals, elephant is the only one which still continues to be taken from the wild to serve man. It has the ability to learn quickly. Its chief qualities are obedience, gentleness and patience and even under circumstances of greatest discomfort such as exposure to the sun or painful surgical operations, it seldom evinces excessive irritation.

There is no relation so close as that between a horse and its rider or between an elephant and its mahout and it does many things at the slightest hint from its mahout whose directions are not preceived by an onlooker not acquainted with the craft of elephant - guidance. From



Life long companions

the ancient Indian literaure, it is revealed that the elephant has 120 vulnerable points (marmsthals) to which 64 are applicable for an efficient control of this gigantic animal with a single blow even in musth condition.

The mahouts, according to their nature, have been classified in Indian literature into 3 classes, namely,

- Reghawan (Coming up to the scratch)
- Yukthiman (Ingenious)
- Balwan (Powerful)

Reghawan is always friendly with his elephant. He acts according to the characteristics and convenience of the elephant. He does not do even a least harm to his elephant and always delights it with kind and loving words, gives fodder and water freely in time. Yukthiman mahout acts according to his convenience as well as the convenience of the elephant. He also tends his elephants carefully. The Balwan mahout, however, depends upon his own wits, strength and power. He often afflicts his animal by harsh, bitter and cruel words of which the elephant is quite intolerant. Often such type of mahouts are killed by elephants, specially while in musth or even when put to hard work for a prolonged time without providing adequate food and water in time.

Today anybody who can mount and ride an elephant is becoming a mahout for his livelihood. knowledge, feeling and intimacy with the elephant is most of the time missing. This has been the main reason for increase in the number of conflicts between mahouts and the elephants. Very few people would now realise that many mahouts were lying down on the backs of their

charge to go to sleep. There are also instances when the elephant would hold the leg of mahout to have courage during fire works. Some mahouts, today, not only ill-treat their elephants but also deprive them of proper bath, water and food in time, and neglect to take the desired precautionary measures which at times lead to serious troubles including killing of human beings.

Sanskrit literature describes 5 methods of capturing of elephants in following order of desirability:

- Pans or stockades;
- by means of female decoys;
- mela shikars or noosing from the back of a trained elephant;
- by nooses concealed on the ground;
- and finally by pit method.

Various methods have been developed over a period of time and have become peculiar to particular geographical region of the country.

The pit method, which is peculiar to South India, has been normally criticised for other animals accidentally falling into the pit and quite often trapped elephants getting serious injuries



The most obedient

but P.D. Strecy, in his book, has observed that whatever be the merits and demerits of the method, nowhere had be seen elephants as well maintained as in South India.

The stockade method or kheda method used to be the most widely used method to capture elephants. Meghasthenes was the first to leave a clear account of the kheda method of capturing the elephants as practiced in Northern India in those days. The evolution of kheda methods in different parts of the Indian Sub-continent has taken place. The main advantage of the method is that the captured elephants remain as free of injuries as possible. The method has been used with great success in Assam, west Bengal and Bangladesh. It was introduced in South India by Sanderson in Mysore plateau in 1874. Operations were, however, abandoned being

quite unremunerative. However, the last kheda in South was done in Kakankote in 1960.

The most prevalent method of catching elephants and the one calling for great skill and courage on the part of both the koonki and the rider is undoubtedly the mela

shikars. Here wild elephants are chased and noosed by phandies from the back of elephants. The method has been practised in the forest of North-east for long. A mela shikar team consists of 3 men;

- a phandi, who does the actual noosing,
- a mahout, who controls the koonki, and
- a 'pichwa' or 'lohatia' who is at the back to prod the elephant to Run-a figure which can be seen in many Hoysala elephant friezes.

In addition there is a Grass Cutter to look after its fodder requirements on the camp.

To become a phandi, a person first serves his apprenticeship, for many years, having started from the bottom as a grass cutter, then rising up to become a mahout before finally being elevated to the distinguished position of the expert, who throws phand or noose over the elephant's head. It is in the interest of elephant conservation that this art which is gradually dying out, should be kept alive.

The majority of government owned elephants today have two persons for their upkeep - (a) Mahout for taking round the tourists/officers for visits and inspections and (b) grasscutter (pattawalla) for collection of fodder, grazing of elephants, and for bathing them. Incidence of an elephant killing a grass cutter is rare, but the incidence of killing of mahouts by elephant is not very infrequent. This is because the elephant gets care and affection from the grass cutters, but often is pressurised by the mahouts to please the tourists and other

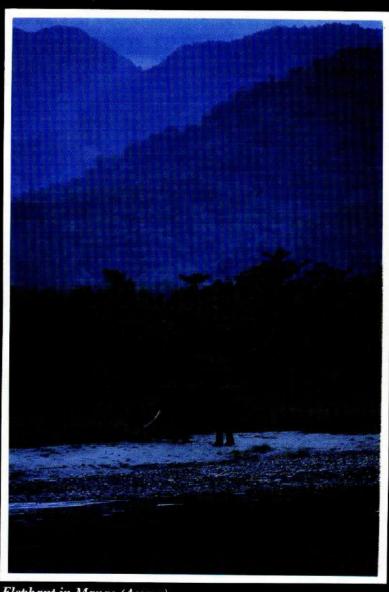
riders on the elephant. To avoid this strained relationship, Elephant Maintenance Manual by Milroy has made a mandatory provision for the mahouts to feed the ration to his elephant every evening/afternoon. There was even a tradition in various Departments of most of the States that an

elephant would be given his feed (ration) by the highest ranking officer camping at a particular place. Gradually, these good traditions are dying out. The younger generation must do everything possible to maintain the tradition of love and understanding of this magnificent animal.

The secret of good mahout-elephant relationship even today remains in the kindness in treatment, regular care for the elephant, and right aptitude to deal with the elephant, though firmness is also an essential component of this art. According to 'Gajapurana', creation of elephant was holy and this must be tended zealously.

"The secret of good mahout-elephant relationship even today remains in the kindness in treatment, regular care for the elephant, and right aptitude to deal with the elephant, though firmness is also an essential component of this art"

DISTRIBUTION AND STATUS OF ELEPHANT POPULATION IN INDIA



Elephant in Manas (Assam)

The elephant inhabited all but the most arid areas in the Indian Sub-continent, having been recorded even from the dry tracts of the Punjab and Sourashtra in the fourth century B.C. Kautilya's Arthashastra mentions eight 'vanas' in the country as abodes of elephants. Since that period the loss of habitat & capture of elephants by kings for their armies led to the depletion of elephant populations

Precise information on the distribution of the elephants in medieval India is available from the memoirs and the writings of the Moghul Emperors of the 16th Century A.D. emperor Babur (1526-1530) notes in his memoirs that the "elephants inhabit the district Kalpi (UP) and as you advance towards the East, the elephants increase in number." Abul Fażal's Ain-i-Akbari, a chronicle of the times of Akbar (1556-1605), records elephants in many parts of Central India including Narwar, Chanderi Satwar, Bijagarh, Raisen and Panna (all in present Madhya Pradesh). Jahangir (1605-1627)

describes an elephant hunt in Dohad in the Panchmahal hills in Gujarat. Jerdon (1874) gives elephant's distribution as the Himalayan foot hills from Bhutan westwards to Dehradun; and in Central India, from Midnapore (West Bengal) to Mandla (Madhya Pradesh) and towards the south of Godavari. Sukumar mentions that the elephants had disappeared from Rajmahal hills only in the 19th century. By the end of the 19th century, four distinct elephant regions had emerged; in southern India, in Central India, a narrow-belt along the Himalayan foot hills from Dehradun in North west; and North East India. Each region had further fragmented populations. In South certain hills of Eastern Ghats such as, the Sheveroys and Kollimalai still held some elephant herds. Francis (1906) mentions that elephants were also seen in the Kalrayans during the mid-nineteenth century although they had disappeared by his time. Imperial Gazetteer of India (1907) refers to many isolated herds of elephants in Northern and Central India like Nahan and Ambala (Punjab), Udaipur (Rajasthan), Bilaspur District (Madhya



Elephant in a waterhole (Bandipur)



Elephant in Dhikala Chaur (Jim Corbett)

Pradesh) and Parkal (Andhra Pradesh), all of which have disappeared since then.

The past and the present distribution of the elephant in India is an indicator of the drastic deterioration and the fast changes in the environment that have led to the progressive decline and reduction of the elephant population and elephant habitat of the country. Nothing illustrates better the need to maintain viable elephant ranges and prevent their fragmentation than these telling facts.

No specific report about the status of elephants in the past in available, but an estimate of the elephant population in the 19th century can be made from the number of elephants captured during the last 100 years. Sukumar estimates that between 30,000 to 50,000 elephants might have been captured throughout the Indian Sub-Continent during this period. Jardin (1836) puts the number of elephants in captivity at that time at 40,000. These numbers give a rough indication regarding the elephant population in

the country during the past.

The Asian Elephant Specialist Group of the International Union for Conservation of Nature and Natural Resources (IUCN) describes the existence of elephants in India in four disjoined geographical regions:

- (i) A North West Indian population in forest division of Dehradun, Bijnore and Nainital Districts in UP;
- (ii) Elephant populations in the South discontinuously distributed in the Western Ghats as well as in parts of the Eastern Ghats in the States of Karnataka, Kerala and Tamil Nadu; (to which can be added Andhra Pradesh where some elephants have moved recently from Tamil Nadu); the Palghat gap separating the two major discreet populations;
- (iii) A Central Indian population discontinuously distributed in South Bihar, South-Western Bengal and Orissa; and

(iv) An Eastern population discontinuously distributed in North Bengal, Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, and Tripura, and some transients in Manipur from neighbouring Mynamar, the range of some sub-populations extending to Mynamar and Bangla Desh.

Summary of Estimates of Elephant Population:-

The estimated elephant population according to the Status Report of the Asian Elephant Specialist Group (1985) was as follows:

Total	16560 - 21361		
North India	445	(Gupta)	
North East India	8705-12231 -	(D.K. Lahiri Choudhury)	
Central India	\pm 1635	(SP Shahi)	
South India	5775-7050	(Nair, Sukumar, Madhav Gadgil)	

There has been no systematic census of elephants in the Eastern States since 1985 except in North Bengal. These States have, however reported the populations to be on the rise. The

elephant population in West Bengal has increased from 155 to 186 (1986-1992). In Uttar Pradesh the population is reported to have increased from 445 (1985) to 975, whereas the populations in Orissa and Bihar are reported to be stable. The latest forest department census figures for the four Southern States sum up to well over 10,000. The possibility of the same elephant herds being counted more than once in the adjoining States cannot be ruled out. However, the population of elephants in India appears to be slowly rising or is being stable at around 20,000. Rise in the population in northeastern India in all probability is the outcome of the ban on capture of elephants for commercial purposes. Lahiri-Choudhury estimates that at least 6,000 elephants were captured in North Eastern States between 1961-1985.

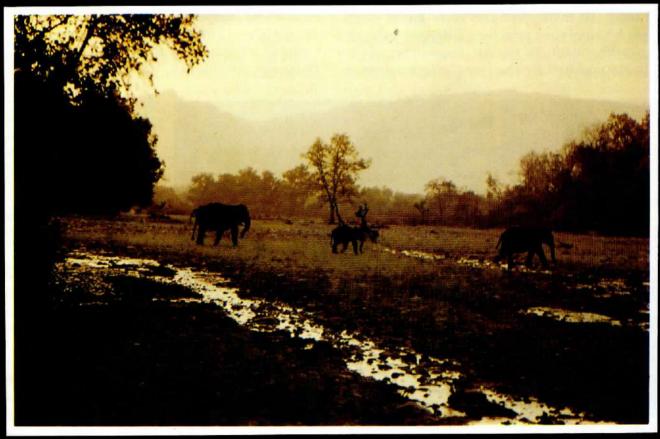
While the conservation efforts have been able to mitigate the direct and more obvious threats to elephant like poaching and unplanned capture (both illegal and legal) for domestication, the most potent threat to the long-term survival of the elephant in India comes from the diversion of elephant habitat for other land uses and its degradation due to excessive exploitation. Even the strengthening of the net work of national

parks sanctuaries with the buffer and core concept has proved to be inadequate to provide safe havens to this long-ranging largest of living terrestrial mammals. Here Project Elephant has come up with the idea of protection ranges of identified populations.



Elephant herd in Nagarhole

CONSERVATION ISSUES



In search of water

The issues relating to Conservation of Elephant can be divided into two distinct categories:

- Activities like hunting and capture which affect the number of elephants directly; and
- Human activities and development programmes leading either to loss of elephant habitat or its qualitative degradation.

Of the activities falling in the first category hunting of elephant for meat is not of much consequence in India due to the taboo attached to the eating of elephant meat in most parts of the country. Capture of elephant for commercial purposes also stands banned after the 1986 amendment of the Wild Life (Protection) Act. A few cases of illegal sale of the elephants, captured from wild, in the garb of captive-bred elephants, cannot be ruled out; but this is not something that may be said to pose an immediate or serious threat to the elephant population of the country. Of the activities falling under the first category, the only activity that is of serious consequence, is the poaching of the male tuskers in South India. Sukumar estimates that at least 100 male elephants were killed every year by the ivory poachers between 1980-86. According to official records, the number of elephants poached by the ivory poachers every

year during mid-80s ranged between 40-60.

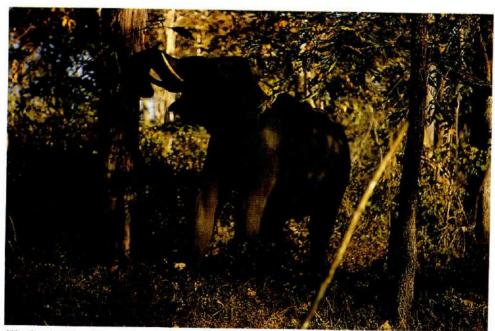
This has seriously affected the male and female ratio in many areas. However, as a result of the strengthening of anti-poaching infrastructure and ban on trade in ivory, ivory-poaching has been reduced to a considerable extent.

The major conservation problem today remains the exploitation of the elephant habitat leading to the qualitative degradation and fragmentation of the habitat. This problem is related to the increase in human population from 252 million in 1911 to 843.93 million in 1991. With the present rate of growth of 2.1%, the predicted population of India for 2000 AD is 960 million. Biotic pressures from such a large population are going to be even more serious. Loss of much of the village forests and private forests to the plough, irrespective of the suitability of the area for permanent agriculture, degradation of such lands into waste lands due to faulty agricultural practices, and absence of appropriate soil conservation measures have compounded the problem of poverty in the rural areas. This has further increased the dependence of the local people and their cattle on the forests and is ultimately leading to accelerated habitat and environmental degradation throughout the elephant ranges in the country. The conservation prob-

lems arising out of the diversion of the elephant habitat to other uses and the overexploitation may be briefly summarised below:

(i) Reduction in the habitat & Fragmentation:-

Conversion of natural forest to commercial timber or pulpwood monoculture plantations of eucalyptus, wattle, teak and silver oak has reduced the elephant habitat at least by 10% in South India (Sukumar).



Elephant debarking a tree – sign of habitat degradation



The crop raider

Large forest areas in Uttar Pradesh have been replaced by Eucalyptus Plan-tations. According to Singh, between 1966 to 1976, one-third of the 1660 Sq. Kms. of the most suitable elephant habitat was converted into monoculture of Eucalyptus and other such quick growing species. Conversion of natural sal forests into teak forests in some parts of Eastern India has affected the elephant habitat seriously. Mining of large depositions have further compounded the problem (Lahri Chouchury-1986). Rapid conversion of natural forests into plantations in North Bengal has reduced the elephant habitat at least by 30% (Lahri Choudhury).

Dams and reservoirs have on one hand submerged prime valley-habitats of elephants, and on the other disrupted habitual migration patterns and fragmented the habitat. There are about 20 hydroelectric reservoirs and five power houses located inside 940 Sq.Km of Annamalai hills (Sukumar). Establishment of Ramganga reservoir in Corbett National Park and the construction of the Chilla Rishikesh

Power Channel have prevented the seasonal migration of elephants in Uttar Pradesh consequently leading to over use of the habitat round the year (Singh).

In Arunachal Pradesh, the habitat available to elephants is shrinking every year, being fragmented by construction of roads and establishment of human settlements in flat area and in the valley. There is also a tendency to settle from upper reaches to the foot hills forests which are the home of elephants (Jonsingh 1985).

(ii) Qualitative Degradation of the Habitat:-

As the biotic pressures on the elephant habitat from within and outside increase, the qualitative degradation of the habitat gets accentuated. Rajaji Wildlife Sanctuary (280 kms part of the proposed Rajaji National Park) is affected by serious lopping and grazing. As a result, 57% of the scrub cover is of unplantable species such as Lantana camara and Adhatoda vasica. Regeneration of elephant species such as Bridelia retusa, Grewia

tilaefolia and Sterculia villosa is negligible. In the dry deciduous forest of Mudumalai wildlife sanctuary in South India, Zizyphus xylopyrus, a favourite fodder tree for elephants, totally lacks regeneration as a result of grazing and fire. Similar situation may be seen in other elephant areas subjected to heavy biotic pressure.

(iii) Shifting Cultivation

In Meghalaya, Nagaland and Tripura a subtle but greater threat to elephants is from the traditional slash-and-burn shifting agriculture, whereby extensive areas of elephant habitat are diverted into agriculture. Between 1950-1980 about 1660 sq.m. or 25% of Tripura's reserve forests were lost through shifting cultivation and refugee settlement. In Nagaland, about 5748 sq. kms or 35% of the geographical area of the State is under shifting cultivation or lying fallow; in Meghalaya about 3115 sq. kms or 43% of the total reserve forest area in the Jainti Hills is in degraded state due to this practice. In the Central Indian State of Orissa about 11,000 sq. kms or 55% of the area of seven Forest Divisions holding elephants is under shifting cultivation (Shahi and Choudhuri).

iv) Crop raiding and human killings by elephants

Elephants require large areas to forage. If their natural areas are large enough, their daily or seasonal migration does not bring them into contact with any cultivation. Once the elephant habitat is fragmented or reduced in size, the isolated elephant populations are hemmed in small patches of forests surrounded by vast area of agricultural crops. During the course of their movement, once they visit the agricultural areas, the palatable food items like paddy, sugarcane or corn grown near the forests become the 'elephant super markets' attracting the animals to these areas even though sufficient food resources might be available for them within the forests. Thus, crop raiding by elephants occurs to varying extent throughout their distributional range, whenever cultivation abuts on elephant habitat. Herds up to 70 elephants have been known to devastate crop fields and pull down huts in which harvested grains are stored in West Bengal (Lahri Choudhury).

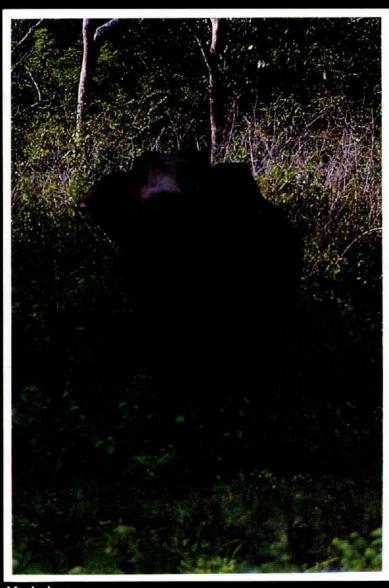
Elephants are known to have shown partiality to drinks like toddy or rice beer stored in village huts, though it is hard to tell how intoxicated they get on the quantities of the brews. Crop raiding is a serious problem in the eastern ghats in the South, Southern Bihar and adjoining parts of Orissa and West Bengal. In Uttar Pradesh, elephants have raided crops, and the public outcry was so intense that, in 1963, the State Government issued permits to shoot marauding elephants. In all, 27 elephants were shot while 12 escaped wounded (Gupta-1985). Very intense crop raiding is now seen in areas like Gumla District of Bihar and Sarguja and Raipur district of Madhya Pradesh, Midnapur and Bankura & Jalpaiguri districts of West Bengal.

Human killing by elephant is the outcome of elephants incursion into cultivation and roughly half of these cases occur within human settlements. Even some of the killings by elephants within the forests have their origin in settlements where elephants may be injured by bullets and later turn into rogues. Many are also accidental killings of people who get in the way unknowingly or are disabled persons unable to react to a crisis situation. Available data indicate that perhaps 200-250 people fall victim to killing by elephants annually. Most of the deaths except those caused by the solitary bulls are accidental in nature. The elephants are now visiting those areas where they had ceased to exist 100 years ago. The villagers, in such areas, not being aware of the behaviour of elephants are more prone to such accidents.

v) Legal and Administrative inadequacies

Forests in North Eastern States of Arunachal, Meghalaya, Nagaland Tripura, Manipur and Mizoram by and large are owned by the District councils or by private Individuals. Only a minor proportion of the forests varying from 24% in Arunachal Pradesh to about 9% in Nagaland and 4% in Meghalaya are Government Reserved Forests which have some sort of management. The remaining forests are subject to uncontrolled slash and burn shifting cultivation, leading to disappearance of prime elephant habitats in many cases.

CONSERVATION STRATEGY & ACTION PLAN



Mock charge

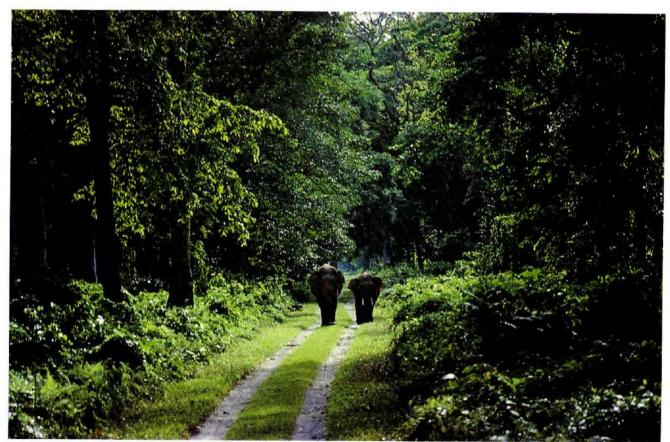
Strategy

s already noted, the major cause of threat to elephant population in India is degradation & fragmentation of the elephant habitat, as a result of which several populations have been hemmed in. Such isolated populations which have no genetic continuity with any other population are susceptible to genetic degradation and are highly vulnerable. For any species there is a critical size of population below which it is more or less doomed to extinction within a certain time period. The goal of conservation, therefore, is to maintain the size of a population at a level that safeguards it against extinction over a period of time.

The Task Force, appointed by Govt. of India recommended the following aims and objects for Project Elephant:

 To conserve and protect the viable elephant population of the country and to ensure that this population remains healthy and viable

- within the ecosystem of which it is an integral part.
- To conserve and protect the habitats of the elephants, and to improve the deterioration of viability and integrity of these habitats wherever necessary.
- To conserve and protect, and where necessary, to open up, existing traditional corridors linking the parts of the habitats being used by the elephants for their migration.
- 4. To create conditions, including welfare measures through ecodevelopment and mitigation of man-elephant conflicts to nurture and restore the traditional compassion and tolerance of the people living in and around elephant habitats who are increasingly falling victim to elephant depredation.
- To take concrete measures to protect the elephant from poaching and other threats.
- To create a viable mechanism to ensure inter-state and regional and national level



Maljuria Associates

coordination in protecting and conserving the elephant and its ranges.

- To create infrastructure and facilities, including manpower training, for conservation support activities, veterinary care, humane methods of tranquilising and translocation, etc.
- To encourage, and create facilities for research related to the ecology of the elephant and also its veterinary aspects.
- To improve the welfare of elephants in domestic use, including veterinary care, training of mahouts, humane treatment of elephants, etc.
- To educate the public about the ecological significance of conserving the elephants and to revive the historical public reverence and compassion for elephants in general.
- 11. To devise strategies and programmes of providing alternative sources of sustenance to craftsmen and communities adversely affected due to the ban on the trade of ivory products.

Minimum viable Area & Habitat Integrity

The minimum viable area for the conservation of elephant is related to the minimum viable population size and to the carrying capacity of the habitat. The carrying capacity of a rain forest may be much lower than a dry deciduous forest.

In a rain forest, the carrying capacity may be around one elephant per 20 sq.kms where as in a dry deciduous forest, it may be one elephant per 5 sq.kms. The ideal habitat with a good mixture of grass lands, might be able to sustain one elephant per 2 sq. kms. The minimum viable area needed for long time conservation of elephant population would, therefore, be around 4000 - 5000 sq. kms. Contiguous area of such a large extent is hard to get but keeping into view the large home and a need for seasonal movement from one habitat type to another, it would be essential to conserve as much area of the elephant habitat as possible. Migration corridors between the adjoining habitats providing genetic continuity between the population living in adjoining habitats, are of crucial importance for making the habitats of reasonable size also viable.

Action Plan

(i) Management of Elephant Ranges and Corridors between Adjoining Habitats:

There can be no hard and fast rule about the design of corridors. The main thing is to ensure that elephant will use them and will not spill over into the adjacent human settlements. The viability of corridors naturally depends on the distances separating the two populations. If the distances are relatively small then the corridor need not be very broad. A corridor of about 1 Km. width could be sufficient to see the elephants through. The width would have to be much more if the distances between the two habitats is significantly more. A corridor need not be a very good habitat. It can be a degraded vegetation or a monoculture that provides cover for the migrating elephants.

In cases of habitats, which have been fragmented by various river valleys, project canals, roads etc., a reasonably broad bridge can function as an effective corridor.

Preserving the integrity of elephant habitats should not be lost sight of while planning any new development project and appropriate measures to keep the migration corridors for elephant intact must be taken.

It is with this fact in view that the Asian Elephant Action Plan has recommended setting up of Managed Elephant Ranges of sufficient size and ecological diversity to accommodate viable elephant populations.

The Task Force appointed by Government of India to finalise the strategy of conservation of elephant under the Project Elephant has identified some elephant ranges for such management to be called Elephant Reserves (Appendix-I).

(ii) Management of the Elephant Habitats:

The areas required for conservation of elephants would be significantly large but it would be neither desirable nor practical to attempt to



Elephant habitat — wet foothill forest

eliminate the human activities and ban forestry operations in these areas altogether. In the words of an ecologist, Mr. Normann Myers, conservation in the developing countries has to sustain not only the spirit but also the stomachs. Any grandiose plan for conservation without making adequate provision for protecting human interest is doomed to failure. The conservation plans for the elephant will have to concentrate not only on restoring the fragmented and degraded home ranges of the elephant but also on the improvement of the quality and security of the life of the human population who share the elephant habitat and its resources for living at the sustenance level. In view of facts stated above, the concept of totally protected "core areas", larger the better, which have been used successfully for the conservation of the tiger may not be useful for elephant conservation. Although there should be no effort to dilute the protection available in the protected areas forming part of the large elephant ranges, the main strategy for the management of elephant ranges would be to accommodate such human activities which are compatible

to and consistent with elephant conservation and still provide the local population their share in the forest usufructs. Sustained yield forestry, controlled live-stock grazing and slow rotation shifting cultivation should not be viewed as the activities necessarily harmful to elephant conservation.

Following guidelines have been recommended for managing the quality of the habitat and keeping the integrity of the areas:

- Most of the proposed "Elephant Reserves" fall in more than one State, inter-state cooperation programme has been recommended for eco-restoration of the habitats by way of moderating the pressure of human demands and allowing nature to heal the scars of over exploitation and eradication of weeds and other exotic plants which do not form part of elephant food;
- Steps to restore critical migration corridors;
- Planting of indigenous species that are preferred by the elephants, wherever necessary;

- Steps to augment & conserve the water resource;
- Creation of effective barriers to prevent elephants from straying out into human habitations and agricultural fields;
- Expeditious payment for loss of life and property caused by elephants and exploring the possibilities of adopting appropriate insurance schemes;
- Efforts to reduce dependence of local communities on forest usufructs and finding alternative means of sustenance;
- 8. Efforts to change the cropping pattern through persuasive methods;
- Programmes for improvement of breeds of livestock, popularisation of alternative sources of energy, and stall feeding of livestock;
- Wherever villagers so desire, steps to translocate villages to safer places;
- 11. Strengthening of infrastructure for anti-poaching measures.

(iii) Measures to Mitigate the Problem of Crop-raiding and Human Killings

One of the major tasks before Project Elephant would be tackling the problem of elephant depredation.

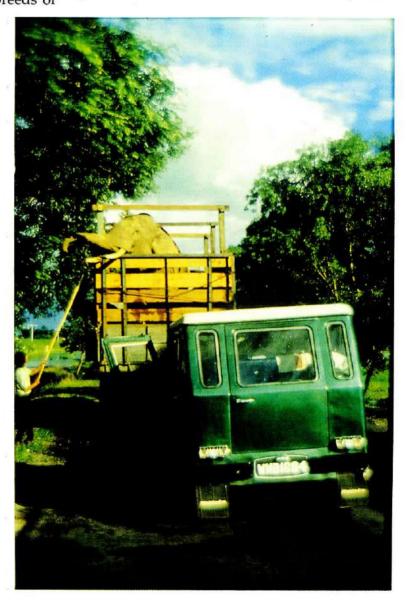
To prevent elephants from straying into agricultural fields, live fences energised by solar cells or 12 volt battery have been used effectively in some areas. In South India, 2 metre x 1/1.5 metre trenches have been tried extensively. Karnataka authorities are trying now three-metre wide trenches.

Sausage barrier of "boulders held together by wire-netting, rubble wall, and fences of iron girdles" have also been tried in some of the areas. None of the barriers has been found to be totally foolproof. The State Government authorities may use any of the methods that they find feasible and effective.

Crop damage can also be reduced by persuading the farmers to grow commercial crops that yield good economic returns but are not consumed by elephants, like oil seeds etc.

(iv) Culling, Capture and Translocation of Elephants

Notorious crop raiding elephants or small hemmed-in populations which are in regular conflict with people may have to be translocated or captured for domestication. The tradition of domesticating elephants in India would make it possible for such small herds to be captured



Translocation of Elephant

rather than killed. However, there may be no alternative but to eliminate adult animals which have turned rogues and are dangerous to human lives. Selective removal of animals which are habitual killers will reduce depredation to a far greater extent than elimination of family herds. While selecting bulls for capture, due care should be taken to ensure that tuskers alone do not become targets for removal or elimination - 'maknas' (tuskless bulls) should also be taken to prevent imbalance in makna-tusker ratio in a population.

(v) Animal Welfare

The strategy spelt out above, which involves some exploitation by domestication, must take into account the need for proper upkeep and care of the animals. The use of elephants for timber operations, patrolling the forest and in tourism will have to be carefully done so that

the elephants are not subjected to undue stress.

Methods of capturing have to be humane and more emphasis has to be laid on training of right type of mahouts. Forest officers and the veterinarians have to be hand-picked and trained to ensure that no cruelty is inflicted on elephants.

(vi) Problem Populations

Being convinced that efforts to protect every individual elephant is bound to dilute the efforts for conservation of elephants by alienating the local communities, the "Task Force" also identified problem populations, which are doing considerable damage to the life and property of the local people. The list of such populations as have been identified till date is in Appendix II. It has been recommended that efforts to translocate such populations to viable

elephant habitats should be taken up. Where these efforts do not mitigate the problem of depredation, such elephant herds must be captured and domesticated and put to effective use. The Task Force recommended setting up of two units for capture of elephants in the South West Bengal, Bihar and Orissa; two units for North Bengal and three units for Assam and Meghalaya.

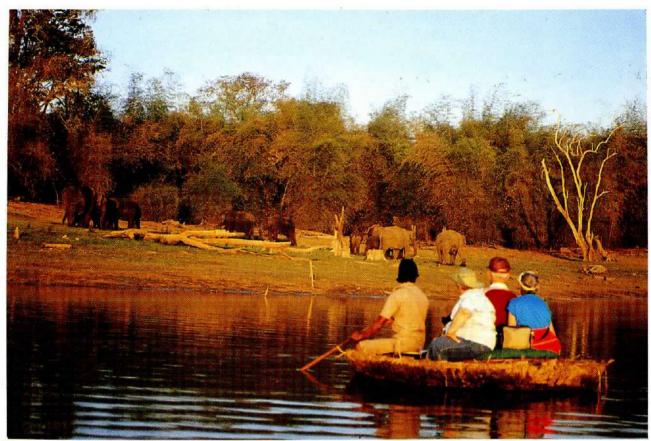
(vii) Other Important Recommendations of the Task Force

The Task Force has recommended that appropriate monitoring and evaluation of the project is very crucial for ensuring that the investment being made into the project is bringing the desired results. The Committee for the monitoring and evaluation should include some anthropologists also in addition to wildlife conservationists.

(a) Research:

For effective implementation of the project, regular collection of field data should be taken up. Help of Wild Life Institute of India, Bombay Natural History Society and other non-governmental organisations working in the line should be taken

Radiocollaring the pachyderm



Elephant India

up in this regard besides posting research officers for each reserve. Small field laboratories having facilities for routine analysis of blood and stool should also be established.

(b) Education and Awareness Campaign:

It is most important that the local people are educated about the tangible benefits of the Project Elephant and they be convinced that no undue restrictions are being imposed on them. The policy of providing employment to the local people in anti-poaching activities, fire control measures and census operations would help in developing a kinship between the reserve authorities and the local people. Educated youth should be involved in the extension programme as part-time extension workers.

(c) Veterinary Units

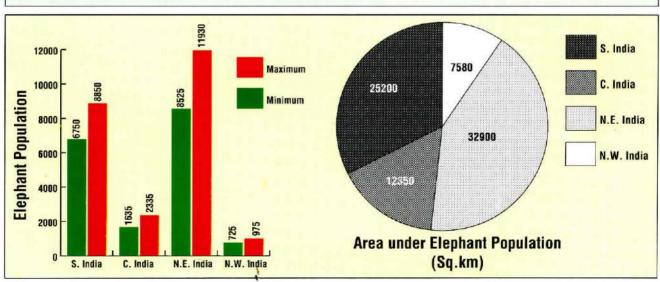
The State Governments should set up veterinary units in the area of each reserve so that they do not only help in capturing of elephants from the fringe areas but also carry our immunisation of live stock against communicable diseases. Each veterinary unit should have a Veterinary Doctor and a Stockman/Com-pounder who are highly dedicated to their job and have the aptitude to cooperating with the local people. Regular training programme should be organised for the staff posted in these units.

(d) Training of Mahouts and Elephant Managers:

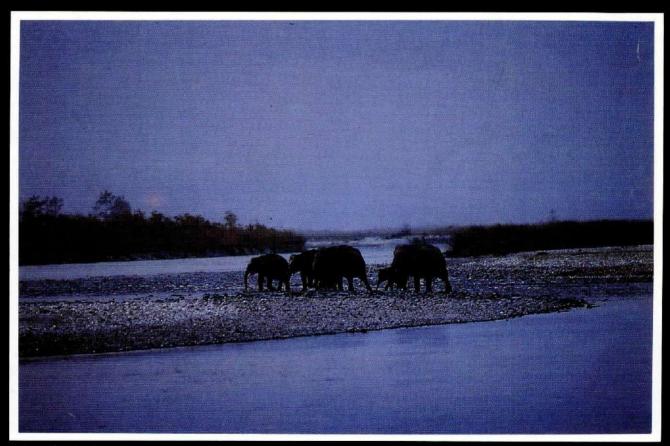
Healthy 'mahout – elephant' relationship and the feeling of compassion and love towards the elephant in this country has a long tradition and history. In recent years there have been reports about the cruelties being inflicted upon elephants by mahouts. The old traditions of compassion and kindness to the elephants have to be restored and regular training programmes for mahouts about handling the elephants in a more humane and affectionate manner have to be organised. Special training courses for the elephant managers both within the Government and in Private organisations should also be provided in the project.

Sukumar (1989) summarises the elephant population of India as follows:

Region		Population		Approximate area
		Minimum	Maximum	of the elephant
				habitat in sq.m.
1. Sc	outhern India			
a.	North Kanara	40	40	2000
b.	Crestline of Karnataka Western Ghat	60	60	1900
c.	Malnad Plateau - Bhadra	100	150	1000
d.	Nagerhole-Kakankote-North Wynad	1000	1500	1500
e.	Bandipur-Mudumalai-South Wynad-			
	North-East Nilgiri	1800	2500	2200
f.	Eastern Ghat (south) including			
	Chittoor district, Andhra Pradesh	1800	2000	7000
g.	Nilambur-West & South Nilgiri-			
U	Attapadi hills	300	500	2100
h.	Nelliampathis Annamalai Palani hills	800	1000	3000
i.	Periyar-Elamalai-Varushanad Hills	700	-900	3000
j.	Agasthyamalai - Ashambu Hills	150	200	1500
2. Ce	entral India			
a.	Orissa	1300	2000	12000
b.	Bihar	335	335	350
3. No	orth Eastern India			
a.	West Bengal	155	155	2000
b.	Assam and Nagaland	3500	3500	10000
C.	Arunachal Pradesh	2000	4300	10000
d.	Meghalaya	2750	3825	8000
e.	Tripura	120	150	2900
f. Mizoram-Manipur NOT SPECIFIC				
1. No	orth West India	725	975	7580



APPENDIX



Asian Elephant in Manas

Appendix - I

South West Bengal – South East Bihar – Orissa Elephant Reserve

 The Reserve comprises of moist deciduous and semi evergreen forests in Orissa, Bihar and South West Bengal. The estimated elephant population of the area is around 3,000. The forest divisions and wildlife reserves covered by the reserve are:

Orissa-Bonai forest division part, Sambalpur forest division part, Devgarh forest division, Keonjhar Karanja, Simlipal, Angul forest division, Ushakoti wildlife sanctuary, Khalsuni wildlife sanctuary, Badampahar.

Bihar - Dalma wildlife sanctuary, Saranda forest division, Kolhan forest division, Porhat forest division, Dhalbhum forest division.

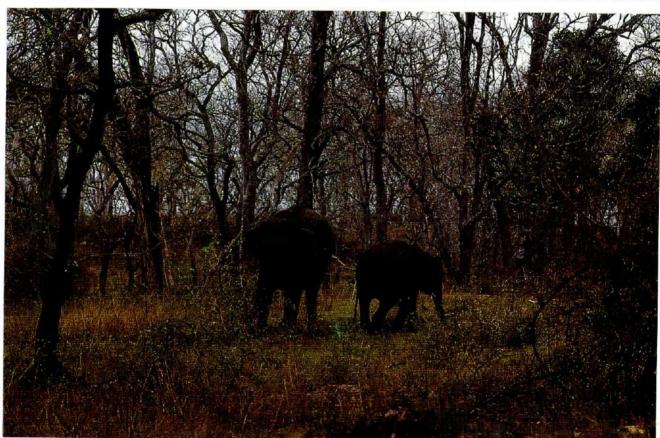
South-West Bengal - Mayur Jharna wildlife sanctuary.

The total area of the reserve is about 8000 to 9000 Sq. kms.

2. The main problems of management are: large scale mining, replacement of natural sal forest with teak forests and included cultivation by the Jharkhand activists. Construction of dams have also contributed in depleting elephant habitats. Large scale disturbances in the elephant habitat have resulted in long distance migration towards Raigarh and Sarguja districts in Madhya Pradesh and Midnapur districts in West Bengal. The instances of man-elephant conflict have increased seriously during recent years due to chasing of elephants from one place to another by the farmers.

2 Kameng – Sonitpur Interstate Reserve

 The area of the reserve extends over about 120 kms. long stretch of semi-evergreen forests in Arunachal Pradesh and Assam. The estimated area of the reserve is about



Elephant in dry decidous habitat

7500 Sq. Kms. covering the following areas with an estimated population of about 1203 elephants. Kheolong forest division Bandardeva forest division, Darang East and west forest division, part of North Kamrup forest division.

2. The main problem of management in the reserve is continued denudation of forests for Bandardeva division in Arunachal Pradesh and all the areas in Assam. Settlements leading to fragmentation of elephant habitat in Bandardeva forest division has also affected the elephant habitat in the reserve. The situation has been further deteriorated due to growing insurgency. The action will have to be taken on priority basis to stop the degradation of forests and programmes for eco-restoration and establishing crucial elephant corridors will also have to be taken up.

3 Dibru Deomali Interstate Elephant Reserve

 This elephant reserve extends over an area of 5000 Sq. Kms. covering following areas.

Arunachal Pradesh – Kamlong wildlife sanctuary, Turung reserve forest, Mamobhom reserve forest, Devmali Kanubari area (Khonsa forest division). Namsai forest division.

Assam – Dibru – Saikhowa wildlife sanctuary, Digboi forest division, Dumduma forest division and Jaypore range of Dibrugarh forest division.

2. The estimated elephant population of the reserve is about 1800. Poaching by local people, including capture of live animals poses a serious threat to elephant population in the reserve. Fragmentation of the habitat and growing tendency of encroachments have affected the reserve over the years. Degradation of the habitat by overuse is also a serious problem.

4 Kaziranga – Karbelong – Intanki Elephant Reserve.

1. The elephant reserve extends over an area of 4,500 Sq. Kms. and the estimated ele-

phant population is between 1500 to 2000 elephants. The area covered under the reserve are:

Assam – Kaziranga National Park, Karbelong East and Karbelong West Division, North Cacharhills Division (South upto Mufa), Golaghat division.

Nagaland – Intanki Wildlife Sanctuary.

- The problems threatening the elephant reserve are insurgency, illegal extraction of timber, encroachment and poaching. The large scale dependence in the habitat have led to elephant straying out in agricultural fields and depredating agricultural crops.
- 3. The proposed action plan includes restoration of 4 migratory corridors between Kaziranga National Park and Karbelong forests. Effective control on poaching and wood-cutting should be implemented. Enlarging the Kaziranga National Park and creation of Mikhir Wildlife Sanctuary should be taken up on priority basis to provide further protection to elephants and facilitate seasonal migration of elephants.

5 Barail – Saifung – Interstate Elephant Reserve.

1. Although the elephant population in this reserve is not more than 150, the State Government of Assam and Meghalaya are interested to create this elephant reserve mainly to provide protection to rich biodiversity found in this area. The total area of the reserve is about 1500 Sq. Kms.

The areas included in the reserve are:

Assam – Cachar and Karimgang (part) forest division, North Cachar forest division part.

Meghalaya – Saifung reserve forest and Norphu reserve forest including the proposed link connecting the two areas.

- 2. At present almost no forest protection infrastructure exists in this area.
- 3. The main problems, therefore, are protection of the habitat, and control of insurgency. Shifting cultivation also affects the habitat at places.

6 Balphakram National Park and the Adjoining Areas

- Balphakram National Park and adjoining areas are the only elephant habitat in Meghalaya, which can provide effective protection and long term safety to the elephant population. Areas covered by the reserve are Balphakram National Park, Dambu Sangsak – Darugia Rongangiri reserve forests including the proposed extension of the park, Bagmara and Cego wildlife sanctuaries and Rewok reserve forest.
- The estimated area of the reserve is about 8,000 Sq.Kms. Out of the this, about 55 % is under vegetation and only 7% is under primary forest. The estimated elephant population is about 2500.
- The main management problems are insurgency, poaching from Bangladesh side, shifting cultivation and cultivation of cash crops by the shifting cultivators. The proposed action plan includes extension of

Balphakram area to about 1500 Sq. Kms., protection from Bangladeshi migrants, capture of excess elephants and activities for ecodevelopment and ecorestoration. Expeditious payment for crop damage and human deaths is also very essential.

7 Nilgiris and Eastern Ghats

1. This is probably the largest reserve for elephants in terms of population size and covers an area of 11000 Sq.Kms. spread over the states of Karnataka, Tamil Nadu, Kerala and Andhra Pradesh. an estimated 5000 elephants occur in this reserve. The forest divisions included in the reserve are:

Karnataka – Hunsur, Nagarhole National Park, Mysore, Bandipur Tiger Reserve, Chamarajanagar, Kollegal, Madhya (part) Bangalore (area = about 5000 Sq. Km.)

Tamilnadu – Madumalai Sanctuary, Gudalur (part) Nilgiris North, Satyamangalam, Erode,



Elephant herd in swamp (moist deciduous forest)

Dharmapuri, Hosur (area = about 5000 Sq. Kms.)

Kerala – Wyanad Sanctuary and adjoining areas such as Alattur Reserve forest, Tirunelli, Judrakote, Hilldale, Trisshaleri, Harikara Shola, etc. (area = about 1000 Sq.Km)

Andhra Pradesh - Chittoor District

- 2. The vegetation over this reserve ranges from moist deciduous forest through dry deciduous forest to dry thorn forest. There are also plantations mainly of teak and eucalyptus in many divisions. There are also numerous human settlements in most of the divisions excepting for Nagarhole and Bandipur.
- 3. The major conservation problems include habitat degradation and fragmentation due to human settlements in places such as Hosur, Dharmapuri, Erode, Satyamangalam, Nilgiris North, Wyanad, Bangalore and Kollegal. Elephant-human conflict in the form of crop depredation and human killing is also common in these area. Poaching of tuskers was a serious problem in the past but has reduced in recent years.
- 4. Strategies for conservation should include:
 - habitat improvement through fire conservation and plantation of suitable species.
 - Securing critical migration corridors such as Masinagudi – Singara corridor in Mudumalai, and Wyanad – Brahmagiri corridor in Kerala.
 - c. trenching and/or electric fencing.
 - d. compensation for crop damage and human deaths.
 - e. ecodevelopment in areas outside wildlife protected areas,
 - strengthening anti-poaching infrastructure.

8 Nilambur – Silent Valley – Coimbatore

 This reserve lying mainly to the south of the Nilgiris and north of the Palghat gap is estimated to have a population of 500-600 elephants spread over 2500 Sq. Kms. in the states of Kerala and Tamilnadu. The forest divisions include:

Kerala – Nilambur (including New Amarambalam, Karimpuzha and Nilambur Vested Forest), Palghat and Kozhikode (including Silent Valley National Park, Attapadi Reserve Forest, Muthukulam, Kallady upto Walayar, ex-Manjeri Kovilakam, Nedunjechi (area about 17000 Sq. Kms.)

Tamil Nadu – Nilgiri South (part including Mukurthi Sanctuary), Coimbatore (area = about 800 Sq. Kms).

- The vegetation includes large stretches of evergreen forests in Nilambur, New Amarambalam, Silent Valley and Attapadi, montane shola-grasslands in Nilgiri South and evergreen and deciduous forests in Coimbatore. Plantation forests are seen in areas such as Nilambur, Attapadi plateau and Coimbatore have numerous human settlements.
- Conservation problems include encroachments of evergreen forests, degradation of vegetation due to fire and human settlements and habitat fragmentation (in Attapadi).
- 4. Conservation strategies include:
 - a. Protection of evergreen forests from degradation by fire control, safeguarding from over exploitation and moratorium on monoculture plantations.
 - Eco-restoration through fodder plantations in Attapadi and parts of Coimbatore.
 - c. Mitigating elephant-human conflict.
 - Securing of corridors in the Attapadi-Coimbatore region.

9 Annamalai – Parambikulam

This reserve occurs to the south of the Palghat gap in the states of Tamilnadu and Kerala. The total population of elephants is estimated at 1000-1200 spread over an area

of about 3000 Sq. Kms. the forest divisions include:

Kerala – Parambikulam Sanctuary, Chimmony Sanctuary, Nenmara, Munnar (part), Malayatoor (part), Chalkudy (part) (area about 2100 Sq. Kms.)

Tamil Nadu – Anamalais (including Indira Gandhi National Park) (area = 900 Sq. Kms.)

- 2. The vegetation is diverse and goes from wet evergreen forest to montane shola-grasslands, moist and dry deciduous forest, and thron forests. There are extensive teak plantations in Parambikulam. Numerous dams and canals of the Parambikulam Aliyar project are seen. There are also coffee estates at the higher altitudes in the Munnar-Valparai region.
- Conservation problems include habitat fragmentation by the network of reservoirs and canals (elephants have fallen several times into these canals), degradation of moist forests due to fire and poaching of tuskers.
- 4. Conservation strategies include:
 - securing safe corridors for the migration of elephants.
 - Habitat improvement through fire control and plantation of suitable species.
 - c. Strengthening of anti-poaching infrastructure.

10 Periyar Madurai

 This reserve is spread over an area of about 3000 Sq. Kms. in the states of Kerala and Tamil Nadu. The estimated population of elephants is about 1600-2000. The forest divisions include:

Kerala-Periyar, Tiger Reserve, Idukki Wildlife Sanctuary, Chinnar Sanctuary, Ranni (part), Kottayam (part), Konni (part), Achenkoil (part) and adjoining areas (area about 2000 sq. kms.)

Tamil Nadu - Madurai South (including Srivilliputhur) (area = about 1000 Sq. Kms.)

The vegetation includes evergreen forest, moist deciduous forest and dry deciduous forest. The Periyar reservoir is the focus of the elephant population here. There are numerous human settlements and plantations on the Kerala side.

- conservation problems include fragmentation of habitat, elephant-human conflict, poaching of tuskers and illegal cultivation of "ganja" inside the forest.
- 4. Conservation strategies include:
 - Identification and securing of crucial corridors for elephant movement throughout the reserve.
 - c. Strengthening of anti-poaching infrastructure.
 - d. Eviction of illegal cultivators.
 - e. Mitigating elephant-human conflict.
 - f. Eco-development programme for improving quality of life for people.

Rajaji – Corbett Elephant Reserve

The area which supports permanent population of elephants in Uttar Pradesh extends through Shiwaliks and Terai Bhabar forest track along the foothills of Himalayas, from river Yamuna in the West to river in the East. The total area of the reserve is about 8,000 Sq. Kms. and the elephant population is estimated to be between 750 to 1000.

The areas included in the reserve are – Dehradun forest division, Shiwalik forest division, Rajaji National Park, Bijnor plantation division, Lansdowns forest division, Kalagarh forest division, Ramnagar forest division, Corbett National Park and Haldwani forest division. The track is covered with sal forest, mixed with miscellaneous species and strewn with rivers and streams, which make it a suitable elephant habitat.

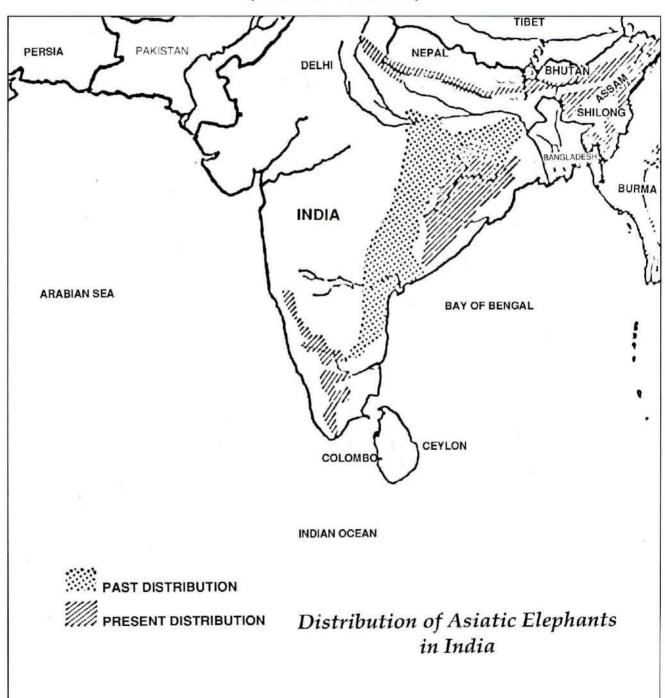
The main management problems are – diversion of land for non-forestry purposes, leading to disruption of migration corridors, over-grazing and lopping of trees by the live-stock held by local people and gujars. Large scale monoculture plantations,

construction of reservoirs have reduced the extent of habitat considerably.

Action Plan – Restoration of migration corridors, control of grazing, eco-restoration

programme and relocation of the population inside crucial elephant habitat, payment of compensation to local people for crop damage.

Distribution of Asiatic Elephants in India (Past & Present)



Appendix - II

Problematic Elephant Population Identified by the Task Force

			No. of Elephants
Assam	Sibsagar	Halangapar	16
	Darang	Bhutiachang	100 +
	Kamrup	Rani	20 +
	Gauhati	Panikhati	25 +
Arunachal Pradesh	Lower Sukanshri	Daflagarh	20 +
	Doimukh		20 +
	Siang Labhabali		25 +
	West Siang Pasighat, R	35 +	
	Debung-Roing-Shantip	40 +	
	Lohit Namsai	40	
Nagaland	Baghty Valley	30	
West Bengal	Jalpaiguri + Darjeeling	(West of Torsa)	75
	East Midnapur (migrar	50	
Meghalaya	Nokrek, Dadengiri	25	
Bihar / Madhya Pradesh	Gumla		
	North Sarguja, Jashpur	25	
Orissa	Chandka		72
	Kotgarh, Mahagiri, Kal	aht	300
Total (Approx.)			918 +

