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Contents

The Asian Elephant: future prospects

J. C. Daniel

The Asian elephant in spite of the close relationship it has had with man since time immemorial, is likely to be the first large mammal to be found only in small numbers and as a domesticated animal by the end of the 21st century. It faces more pressures on its habitat than its African counterpart and its survival is very closely linked to the increasing human population and its demand on natural resources. This is a thesis which has solid historic support when one examines the distribution of the species within the last several millennia. To recapitulate, its known historic distribution was from the Tigris and Eupharates valleys of Syria and Iraq to the Yellow river in China and south to Sumatra. Today only a fragmented population exists from India eastwards.

A settled agricultural human society has always spelt doom for the larger herbivores unless they had been assimilated as a domesticated natural resource and the elephant is a classic example of an animal well on its way to being so assimilated. As the river valleys were converted from forests to agriculture, they were able to support a larger static human population, which in turn demanded more from the surrounding natural resources. This was limited by the regeneration capacity linked to the rainfall regime of the area. There is clear historical evidence, at least in north India, to prove that over the last several centuries, rainfall has progressively decreased. This is probably a result of climatic changes over the centuries but there is certainly evidence that human cultural development as a settled agricultural community has been a major cause for destruction of the original habitat and with it the wildlife dependent on such habitats.

In terms of numbers, the existing population which is believed to be between 34,000 and 54,000 is very small indeed when compared to the current population of about 700,000 of the African elephant. But in terms of conservation, the Asian elephant has a higher survival potential than the African elephant. The crucial factor responsible for this survival potential is the relationship between man and elephant in South East Asia. In almost all the human cultures prevailing in this area, the elephant is a part of the religious ethos and is therefore conventionally protected. How long this protection will stand the strain placed on it and how best these can be overcome for the conservation of the species should be carefully and urgently considered.

In India, which has the largest population of elephants, special attention to their conservation commenced with the formation of the Asian Elephant Specialist Group of the IUCN in 1976. The status survey that was made between the years 1976-80 and reported in the document published in 1980 has not been repeated. In India, the trend turned to research on identified areas of prime elephant habitat, by scientists of the Centre for Ecological Sciences, the Bombay Natural History Society and the Wildlife Institute of India. The sustained interest in the conservation of the Asian Elephant fostered by the IUCN and Indian institutions such as the Bombay Natural History Society, Wildlife Institute of India, and Centre for Ecological Sciences, prompted the Government of India to plan the organisation of a PROJECT ELEPHANT similar in principle to Project Tiger. A task force was established to spell out the problems facing the elephant and to frame a

long term conservation programme for the elephant in India under a specially funded initiative, namely the Project Elephant. The objectives were defined as under:

Objectives of Project Elephant

(a) Ensuring the long-term survival of identified larger populations.

(b) Evolving management plans for the smaller populations, mainly with a view to reducing man-elephant confrontations and ensuring their survival pending further review of the ground situation.

Objectives of Elephant Reserves

(a) Ensuring the long-term survival of identified larger populations [(a) >1000, (b) >2000, (c) <200]: the target in the first phase should be categories 'a', 'b' and category 'c' will cover under 1 (b) above;

(b) by protecting their habitat and existing ranges;

(c) linking up already fragmented portions by establishing corridors wherever possible and protecting corridors at present under threat;

(d) improving the quality of the habitat wherever necessary by attempting ecosystem restoration and other measures keeping in main objective of range protection in view;

(e) attending to the socio-economic problems associated with this, especially the problem of elephant depredation, loss of employment, and problems arising out of restrictions on use of forest produce by the fringe populations.

The Committee appointed by the Government of India identifies the following major problems facing the Indian Elephant population namely loss and fragmentation of habitats, loss of habitat quality or range degradation and the inability of such areas to support existing elephant populations; loss of forest lands to meet the needs of increasing human population. The conservation strategy recommended by the Committee has as its goal (a) ensuring that each elephant holding state maintains one or two natural viable populations of elephant. (b) Assure that the local communities in the environs of such areas are not adversely affected. (c) Ensure that individual problem elephants do not mitigate conservation efforts aimed at the whole population.

The project is now in operation and is on a much lower level of public awareness than Project Tiger and is funded at a much lower level than Project Tiger. In the allocation of funds, studies by the Bombay Natural History Society have brought out very interesting data on elephants and their effect on the habitat. For instance, Sivaganesan's studies on habitat utilisation have shown that over-exploitation of food species does not lead to destruction of the forest community as a whole but the selective disappearance of the most favoured species of tress fed on by the elephants in the different habitat types. What is required are methods for regeneration of favoured food species. The problems facing the wildlife manager in the conservation of the elephant have been clearly brought out by Ajay Desai. In a recent paper he shows that home ranges of herds cover areas with different levels of protection in a conservation area and a herd or for that matter a population of elephants living within a National Park or Wildlife sanctuary is therefore not assured of complete protection throughout its range. It is therefore necessary to assure that there is a strong research component not only to collect basic data but also to examine management oriented problems.

It is now necessary to repeat the status surveys undertaken over a decade ago to determine general population trends and habitat status. There has been considerable difference of

opinion on census methods. The method to be used will vary with ground conditions. This has to be appreciated but there can be no difference of opinion that a status survey of the Asian Elephant population is now imperative. One of the major objectives of Project Elephant is to identify and protect complex of contiguous national parks and sanctuaries as a Composite Elephant Range. These would be the essential conservation target areas for the elephant similar in basic management concepts to the existing project Tiger areas.

A priority requirement is to survey in depth the potential of a complex of sanctuaries as an elephant range for the long-term survival of viable elephant populations through precise assessment of existing elephant populations; assessing habitat status of the component sanctuaries and national Parks; assessing the corridors between the protected areas and their viability; assessing the pressures from human activities and their long-term protected area components of the range; assessing present human/elephant conflict areas, potential human/ elephant conflict areas within the range; assessing impact of future developmental plans on the range as a whole.

This is crucial for all identified elephant ranges as the future of the elephant depends on how best elephant and human needs can be met in a continually deteriorating environmental situation in the country owing to the uncontrolled increase in the human population and the consequent escalating demand on natural resources.

A basic research which will be useful in this context and which is in progress at the moment in one identified elephant range, is data collection on ranging behaviour of elephants from radio collared elephants; to assess exact home ranges; to identify precisely critical areas in the range at different seasons; to identify crop raiders, extent of such raids and probable causes and to determine the extent to which collared elephants range outside protected areas.

Another area for priority consideration is the status of elephants stranded in habitats fragmented by human encroachment. There are several populations which have now been isolated from the main elephant ranges and it is necessary to determine the minimum requirements of such pocketed populations for their continued survival. It is therefore necessary to assess the capacity of such habitats to hold existing populations; to assess the viability of pocketed populations in different habitat types; to assess the pressures on such populations and the long term viability of the habitat and its elephant populations.

The future of non-viable populations is a cause for considerable concern. Culling as is practised in Africa is not acceptable as far as the Asian elephant is considered, at least in India. The only available alternative is capture and domestication. Apparently it is now the Central Government's policy to encourage the use of elephants in forestry practices as they were used in former years. It should also be possible to meet the requirements of non-governmental needs. However, it is essential that a school for the capture, management and training of elephants and mahouts be established immediately. The expertise is available in India and the need is urgent. Capture can now be humanely done using immobilising and tranquillising drugs and the most humane method of training is *kraal* training as is practised in south India.

The major populations in India are genetically isolated. It is now essential to examine the genetic status of isolated populations and to consider ways and means of establishing gene flow between populations permanently isolated. Relationship between clans in stable populations, among domesticated elephants and whether domesticated elephants can be made the gene exchange carriers between permanently isolated populations are problems that now require serious consideration.

The Conservation of the Asian elephant in India cannot be the concern of only the forest department and environmentalists. Conserving the elephant involves the conservation of prime wildlife habitats. This needs a multidisciplinary effort where the local people, the administrators and land use planners at all levels have to be involved. Conserving the elephant therefore means conserving the human environment and it has to be a part of the development plans of the state and the country as a whole.

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News from Sri Lanka

An update on the status of the wild elephants in Sri Lanka was long overdue. The last assessment of the status of the elephants in Sri Lanka was carried out more than 20 years ago jointly by the Department of Wildlife Conservation (Sri Lanka) and the Smithsonian Institution (USA). Dr. George McKay estimated the minimum size of the total population of wild elephants at that time to be between 1,600 and 2,200. A more recent estimate by Mr. A.B. Fernando, (a member of the AESG) puts the figure as anything between 2,800 and 3,250 in the late 80's. Some have even speculated that the number of elephants could be as hig as 6,000. The problem in Sri Lanka is further compounded by the on going ethnic conflict in the north and east which has made many of the elephant areas in these regions inaccessible. Therefore an island wide census of elephants is impossible at present.

Given this situation, the Director of the Department of Wildlife Conservation, Mr. W.A. Jayasinghe initiated a survey of the elephants to monitor the changes in the structure of elephant populations across as large an area as is feasible. The main objective was to provide some training to the field staff so that they could standardize the methods and carry on monitoring the elephants on a yearly basis.

The survey was carried out in June 1993 in the Southern, Central, Eastern, Northwestern and Mahaweli regions and it involved about 800 people, including the field staff of the Department of Wildlife Conservation and NGOs. Estimation of elephant numbers was incidental to the main objective. Much emphasis was placed on the need to monitor the proportion of calves and tuskers - two of the most vulnerable categories - in the local populations.

The survey indicates that the population structure of the elephants is biased in favour of the adult animals. The proportions of the adults, subadults, juveniles and calves on an average were 51.9%, 21.8%, 15.7% and 10.6% respectively. The highest proportion (12.1%) of the calves was seen in the Southern population. The adult sex ratio varied from 1:1 to 1:2.9. The proportion of adult bulls with tusks varied from 2.8% to 15.3%. The national average for the percentage of tuskers among the adult bulls is 7.3. It is estimated that at least about 2,000 elephants (minimum estimate) are present in the five regions in Sri Lanka. A full report of the survey will be published at a later date. **(Ch. S)**

Elephant management and conservation in the Mahaweli project areas

Jayantha Jayewardene

The Accelerated Mahaweli Development Programme (AMDP) is the largest and most ambitious development project that Sri Lanka has undertaken. The Master Plan for this programme provides for the development of 900,000 acres of land with the provision of irrigation facilities. Over 200,000 farmer families were to be settled in the newly developed areas. It was also envisaged that 500 megawatts of hydro-power would be generated by the many dams that were to be constructed across the Mahaweli river, under this programme.

The initial step is to clear the jungle lands before the irrigation system can be constructed and the landless families settled. With the progressive clearing of the jungles, it became obvious that the flora in the area would be destroyed and the fauna would lose their habitats. With regard to the reptiles and smaller mammals this was not too much of a problem in that they were able to inhabit the small patches of jungle that were left when clearing work was done.

The bigger problem however was with regard to larger animals, especially the elephant, whose habitat was being destroyed. When the Master Plan for the AMDP was formulated no thought seemed to have been given to the impact that such a massive development scheme, which necessitated the clearing of large tracts of forest, would have on the environment. When System H, (Fig. 1) the first Mahaweli settlement project, was started, it was obvious that there would be serious problems with the herds of elephants that were being displaced as a result of jungle clearing. With the decision to accelerate the Mahaweli programme and the feasibility studies that were then necessary, it was possible to have a survey of the impact that this programme would have on the environment and obtain recommendations of the measures that could be taken to mitigate these adverse effects.

With jungle clearing and settlement moving forward the herds of elephants were also pushed further and further. In addition to the herds there are also loners and small groups of elephants, who also get pushed along. Initially the elephants move away but with progressive clearing, when the pressure for food and water is felt, they come back to the areas they had inhabited, in search of food and water. With their return they are chased away by the settlers and the elephants go away. The settlers shout, light fireworks and flares, beat tom toms and light fires to keep the elephants away as most elephant forays are in the night. The elephants move away at first as they are not aggressive animals by nature. This is proved by the fact that a wild elephant when caught can be tamed very easily.

When the elephants are continuously chased off and they have nowhere to go, they naturally turn round and retaliate. At first their charges and attacks are not severe or dangerous. Later on they become more determined to get at this tasty and easily available food like banana, papaw and paddy. When their efforts at protecting their crops and habitations from the depredations of the elephants fail, the farmers are compelled to use guns. Guns in the hands of inexperienced farmers will not kill the elephants as intended but will only injure and maim them. Here too the animals are repelled only temporarily. After a while they come back.

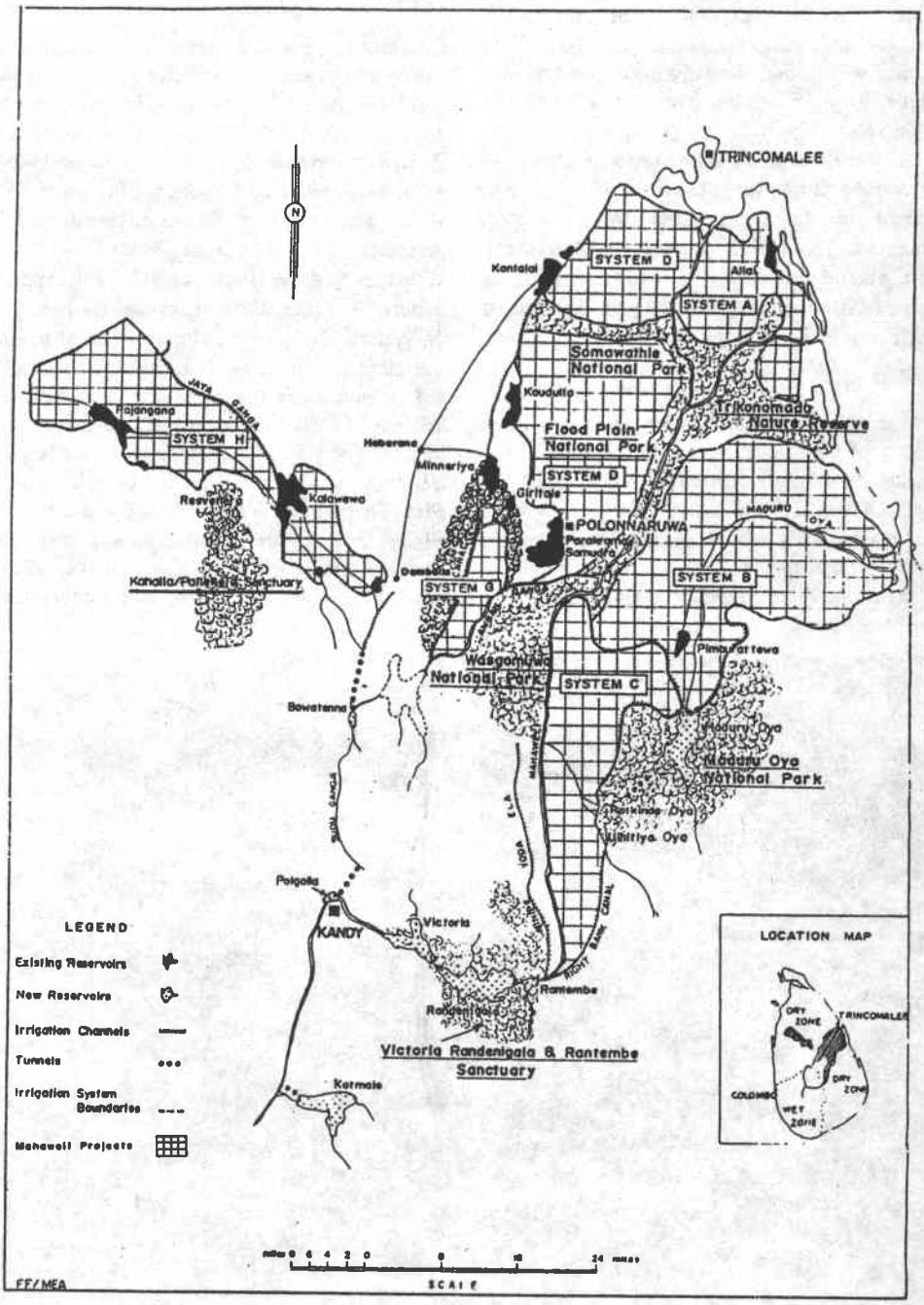

Fig. 1 Map of Mahaweli project area and adjacent reserves.

Meanwhile the gunshot wounds will fester and irritate the animal who will be maddened by the pain and suffering it has to undergo. This situation will turn a normally docile animal into a rogue. Rogues, as they are popularly known, are lone elephants, who do not behave as normal elephants do, but attack human beings and cause destruction. It is very easy to kill a rogue elephant by having it shot by an expert marksman. The point, however, is that every effort should be made to prevent harmless elephants from turning into rogues because of the ill conceived actions of man.

Another very significant point is that a large number of elephants have been killed in and around the Mahaweli areas over the last 10 years. Of the animals killed nearly 75% have been males. This would degrade the breeding quality of the species due to the reduction in the breeding male elephant population.

Elephant Drives

Constant forays by elephants into settlers' cultivations and habitations were reported regularly from System H. The situation got worse as time went on. The Department of Wildlife Conservation, after may requests to do something positive, decided in the interests of all concerned, to drive the elephants causing problems in and around System H to the Wilpattu National Park. This Park is approximately 50 miles away from the furthest point in System H. The Department decided to drive the elephants because noosing and tranquillising, which were the other methods available, had not in earlier instances yielded the expected results. The size of the herds were too large for trapping by individuals as had been done in the past. This would in any case have taken a long time. Driving the elephants was the most humane and sensible approach in the effort to save these animals. Driving the elephants also

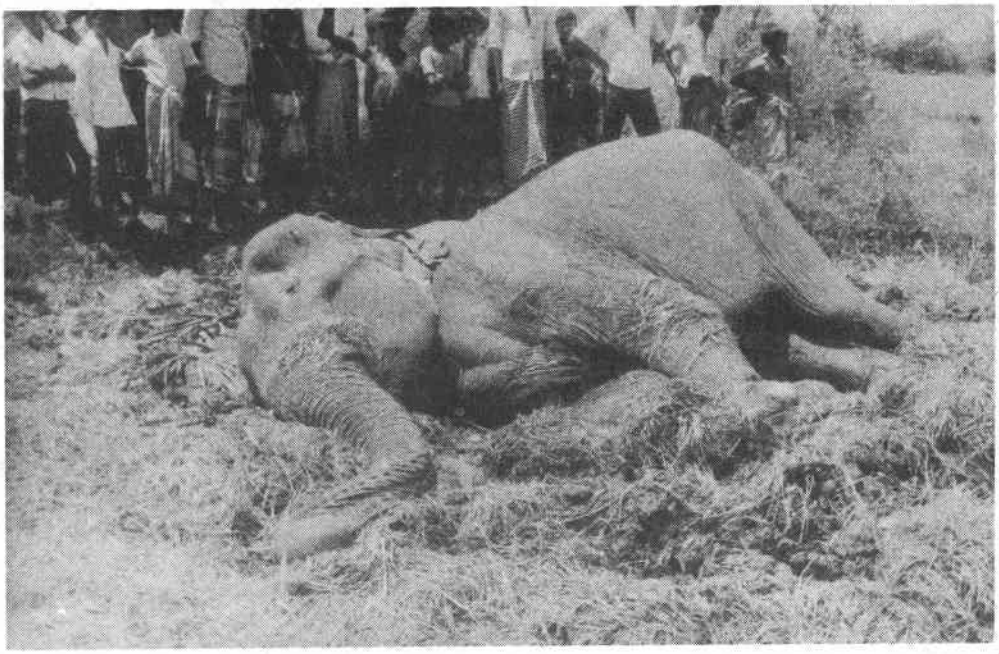

Fig. 2 An elephant killed at Kalawewa in system H.

ensures that all the animals are moved away and no animals are pocketed in small patches of jungle after land development. This happened in earlier settlement projects like Gal Oya and Uda Walawe and caused a lot of problems.

In 1979, about 130 elephants in the Nochchiyagama area in System H were driven across the Puttalam-Anuradhapura road to the Wilpattu National Park and it environs. However, as no precautions were taken to ensure that the animals did not leave this area, most of them returned. These elephants had to be driven back again. In 1981, it was decided to drive the elephants which had collected in the Resvehera jungles to the Wilpattu National Park. Careful and detailed planning was necessary prior to driving elephants. The behaviour and attitudes of the elephants had to be studied before making an attempt to translocate them. There had been no drives of this magnitude in the past, so there was no previous experience to draw on at all.

Driving the Resvehera herd, which was scheduled to commence in 1981, had to be delayed due to unusual rains. Certain parts of the route had not been cleared of scrub etc. and this too contributed to the decision to postpone the drive for the dry period in July-August of the next year 1982. The drive ultimately started in August 1982 when 60 odd elephants were driven towards Wilpattu National Park. Progress was slow. The monsoon rains at the end of the year prevented any effective driving of elephants. All efforts during this time were directed at keeping the elephants from going back.

In March, 1982, Prince Phillip, Duke of Edinburgh, who was the President of World Wildlife Fund, visited Sri Lanka to watch the elephant drive. He viewed it from a platform built in the Kathnoruwa jungle within the System H project area.

In March 1983, the Resvehera herd was finally moved into the Wilpattu National Park, together with several small herds from patches of forest in the Mi Oya basin. They were pushed as far as Pomparippu, but some of them kept returning to the banks of the Kala Oya. The severe drought in early 1983 kept the elephants near the Kala Oya, as this was their only source of water.

The University of Colombo and the Department Wildlife Conservation carried out a project to study the behaviour of the translocated herds and the ecology of the Wilpattu National Park. This study has revealed that the vegetation in the southern sector of the Park is too woody and that certain feeding grounds do not have sufficient water during periods of drought.

A number of problems were encountered during the course of these drives. There were no previous experiences of drives of this nature which the Department could draw upon. There was a great deal of resistance from the villagers all along the drive route, mainly because the elephants, going through their lands caused much damage to property and cultivations and also as they were a threat to the villagers' lives. The curiosity of the people also hampered the drive in that they got in the way, thus creating a big risk for the Wildlife Department staff. In spite of all this, the achievements by the staff have been very creditable.

Towards the latter part of 1984 conflicts within the Department of Wildlife Conservation caused many changes in staff and as a result the wide experience gathered from the elephant drives by a number of their staff was lost. This set back any programme to reduce the man/elephant conflicts that were increasing in the Mahaweli areas. In May 1988 the Department of Wildlife, together with the Mahaweli Economic Agency carried out a pilot elephant drive in System B. This was under the Mahaweli Environment Project (MEP). This drive was to be from the Dimulagala Block area to the Maduru Oya National Park. The drive started off with a herd