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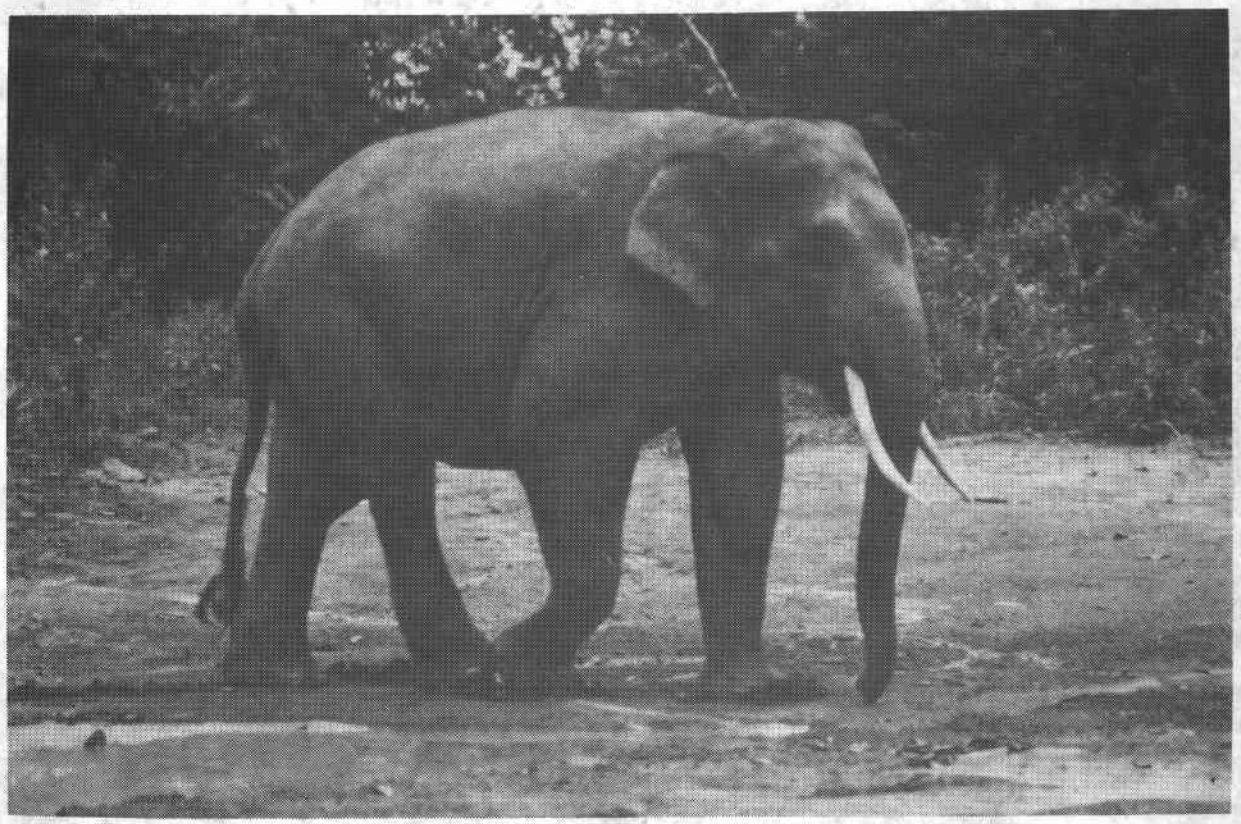
ASIAN ELEPHANT SPECIALIST GROUP

NEWSLETTER



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Asian Elephant Specialist Group
NEWSLETTER

Number 6
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The Asian Elephant Specialist Group Newsletter is published with the following aims: –

- to highlight the plight of the Asian Elephant
- to promote the conservation of the Asian Elephant
- to provide a forum for communication amongst all the members

Newsworthy articles are invited for consideration for publication and should be sent to Dr Charles Santiapillai at WWF–Asia Programme, PO Box 133, Bogor, Indonesia. All articles may be reprinted. Reprinted articles should give credit to the Newsletter. The editors would appreciate receiving a copy of any article so used. The opinions expressed by the authors do not necessarily reflect the policies of either WWF or IUCN.

Cover: An adult Sumatran bull elephant in the Way Kambas National Park, Lampung Province in Southern Sumatra. (Photo credit: Alain Compost).

EDITORIAL

A PLEA TO HELP SAVE THE ASIAN ELEPHANT

The public appeals for saving the African elephant from extinction have been so positive and widespread as to give the impression that no other elephant exists in the world. It has become prestigious for organizations and individuals to be identified with actions aimed at preserving the African elephant. Conservationists had forgotten or ignored the fact that an elephant as stately and more majestic, an elephant which served and still serves man in war and peace, in agriculture and industry, and in religion and ceremony living in Asia, is making a last ditch stand against that same man.

When a closer look was at last taken at the plight of the Asian elephant, what people saw was a bizarre picture of these amiable giants fleeing their age-old homes or being massacred as they cowered in new hiding places. Elephants which were once counted in their tens of thousands in the rain forests or on the plains across a dozen national frontiers, were suddenly reduced to pathetic little herds in pockets of equally pathetic forest fragments.

Today it is doubtful if, the wild populations in all thirteen countries of the species range would add up to 50,000 animals. That is a gloomy prospect when we consider the vastnees of its range from Sri Lanka, India & Burma as far as Vietnam and China. It appears like a lot of land but in actual fact there are only some 500,000 km^2 of wild habitat left and this is declining at an average rate of 4000 km^2 per annum.

In comparison, Africa still has 7,000,000 km^2 of forest for its estimated 600,000 elephants, more than 10 times the number in Asia. And what is more, some countries in Africa such as Zimbabwe, South Africa & Zambia have elephants to spare for the ivory trade!

However the Asian elephant was not altogether sacrificed to politician and developer. In each country scores of dedicated and courageous wildlife consercationists & enthusiasts kept the 'enemy' at bay, so to speak and swayed the public to campaign for total protection for elephants. Several Asian countries have strong legal enactments for wildlife conservation in general, and elephants in particular. Enlightened Heads of State actively support such measures but the pressure never slackens. Annual losses of both elephants and habitat keep elephants on the critically endangered list.

In 1978, the Species Survival Commission (SSC) of IUCN responded to the repeated calls for a long-term plan to save the Asian elephant. It formed the Asian Elephant Specialists Group (AESG) to pool expert knowledge and experience available in the region and elsewhere to formulate and implement just such a plan.

From small beginnings with a State membership of only seven under the chairmanship of the erstwhile Mr. J.C. Daniel of the Bombay Natural History Society (BNHS), the AESG has grown into a strong, hard-working (and sometimes hard-hitting!) body of forty six members representing all thirteen countries in which the Asian elephant occurs in a wild state.

These countries are India, Sri Lanka, Bangladesh, Nepal, Bhutan, Burma, Thailand, Malaysia (both West and East), Indonesia, Cambodia, Vietnam, Laos and China.

Although the AESG is primarily an advisory body, its members have, in several instances, pursuaded their respective governments to rethink development plans which would seriously diminish elephant habitats and further endanger elephant populations. Such action has been made possible

because, the group has moved away from anecdotal information to building up solid scientific data based on applied research and practical experience in the field.

Today the AESG is in a position to forewarn governments against initiating development schemes which will be inimical to the environment and hence far from being useful to settlers in the long term. Much habitat has been saved by such timely intervention. Further, where conflicts arise through previously unplanned 'development', the AESG is able to move in with practical solutions, depending on the way in which the conflict manifests itself, eg. vulnerable cultivations are being protected with electric fences, a method now readily applicable because its success has been tested in the field. Capture and translocation of 'problem' elephants using immobilizing drugs has also been rendered so safe as to be frequently used as a conservation tool.

We are happy that AESG members now share available knowledge and expertise to either save elephants in distress or to help farmers protect their crops. Such sharing is done even across borders. Recently where three elephants 'invaded' an outlying island belonging to Singapore, the services of Malaysia's elephant capture and translocation team were solicited. They responded at once, and within a week the elephants were safely back in a reserve on the mainland of Malaysia. Similarly an AESG member lent his expertise on electric fencing to erect electrifield barriers to deter elephants from raiding crops in China's Yunnan province. These instances, occuring as they do across national borders, make an impression on their respective governments.

Extending the group's membership into the Indo-Chinese region, two or three years ago, augured well for the elephant populations of Cambodia, Laos and Vietnam. Members from these countries are now even exploring the possibility of forming a common protected area for some 300 elephants which move across their borders during seasonal migrations. This idea is being actively pursued and if accepted by their governments, will be a unique reserve, and the first of its kind.

But we have a great deal more to do. For instance we have put together an Action Plan but lack the resources to implement it. We have to work closer with governments to help solve environmental problems utilising the knowledge and experience gained over the past 10—12 years, but again lack the institutional framework for effective action. In a attempt at organising ourselves and building up resources, we established a Secretariat in Bangalore, India, with the blessings of WWF International.

We feel that this Secretariat, known as the Asian Elephant Conservation Centre (AECC) is a logical step in our progress. Governed by a Steering Committee of AESG members and managed by member Dr. R. Sukumar, also of the Indian Institute of science, the AECC has the following aims and objectives:

1. Identify the target elephant populations in Asia, which offer the best hopes for long-term survival and concentrate on safe-guarding these key populations through government and field actions.

2. Carry out in-depth ecological studies in these selected populations and their habitats in order to obtain the best, most reliable and quantifiable data as a basis for sound management of elephant populations and their habitats.

3. Design a mechanism for sharing practical knowledge especially in solving problems concerning herds migrating within or across national borders. This will also involve strengthening the capabilities of staff through training programmes, workshop, etc.

4. Compilation of records of all the publications to date on the elephant and its habitat. This is particularly relevant today when research on elephants has become widespread and the publication of books has gathered momentum.

The AECC, if it is to really become a useful venue for scientist to meet and work, must have a good library, stocked with all the books on elephants and their habitats. The secretariat also hopes to subscribe to relevant journals in association with the Centre for Ecological Studies in Bangalore (where it is sited) and the BNHS.

We should address all those organisations (especially zoos which keep and breed Asian elephants), associations and individuals interested in the future of this noble animal. Our first priority is to establish a Trust Fund of at least US$ 30,000, in order to generate income sufficient to achieve some of our objectives. I was overwhelmed by the generosity of one Zoological Society in the USA, that donated US$ 5000 towards this figure even before I sent out this appeal. I hope that the response to this explanatory editorial will be equally encouraging.

May I take the liberty of thanking you in advance!

Lyn de Alwis

ASIAN ELEPHANT CONSERVATION CENTRE (AECC)

The idea for the AECC came up at the last AESG Meeting held in Chiangmai, Thailand in 1988. The AECC was subsequently established at the Centre for Ecological Sciences, at the Indian Institute of Science. It is headed by Dr. R. Sukumar who is assisted by Mr J.A. Santosh and Miss Uma Maheswaran. The Centre is funded by a generous grant from WWF—International.

Progress:

1. *Training:* Ms Uma Maheswaran attended a workshop on database management conducted by Dr John MacKinnon at Bogor, Indonesia from 15 August to 13 September. Her training enables her to assist the AECC in building up its own database.

2. *Workshop:* The AECC held a Workshop on Censusing Elephants in Forests from 2—10 January, 1991 in Mudumalai Wildlife Sanctuary and it was attended by over 30 participants.

3. *Database on Asian Elephant:* A number of documents have been collected on Asian Elephant: its status, distribution, biology and conservation. A bibliography of some 600 references on Asian elephants has been computerised in dBase and can now be accessed through key words. This will soon be brought out as a report. Setting up of a computerised database on the Asian Elephant has begun. The database will begin with India and Sumatra for which the most detailed information has been collected.

The AECC is in touch with the World Conservation Monitoring Centre in Cambridge, UK, regarding the acquisition of a Geographical Information System. This would ensure that the database maintained by the AECC is compatible with those used by the entire SSC network.

4. *Population Viability Analysis* (PVA): Dr R. Sukumar, the Coordinator of AECC worked in collaboration with Dr. N.V. Joshi

on a PVA for the Asian Elephant. One of the main problems facing the Asian elephant is fragmantation of habitat and hence isolation of small populations. The probability of survival of small herds for a certain time period needs to be determined before settling on a particular management option.

5. *Networking:* The AECC circulated an announcement about the establishment of the Secretariat to various Government agencies and Institusions in India as a beginning. The Executive Secretary is currently compiling a list of agencies outside India with whom contact will soon be established.

6. *Fund raising:* During his Smithsonian-sponsored visit to the USA, Dr. Sukumar went on a lecture tour of various Universities and Zoos where the conservation problems facing the Asian elephant were highlighted. He also had discussions with Dr Dale Tuttle, Director of the Jacksonville Zoo and Coordinator of the North American Species Survival Programe for Asian Elephants, on raising funds for an endowment to be set up by IUCN for the AESG. Dr. Tuttle has kindly agreed to help organize the campaign.

7. *Conservation Action:* The Ministry of Environment and Forests, Government of India has constituted a six-member Task Force for finalising the plan for PROJECT ELEPHANT to be implemented from 1991. It was agreed in principle that the AECC would assist the project directorate in its monitoring.

Proposed activities:

1. *Publications:* The AECC plans to produce Monographs on selected topics prepared by members. Among the monographs planned for the near future are (a) Translocation of Wild Elephants by Prof. D.K. Lahiri–Choudhury; (b) Postmortem on Elephants by Dr. V. Krishnamurthi; (c) Field Guide to Asian Elephants by Dr. R. Sukumar; (d) Proceedings of the Workshop on Censusing Elephants in Forests; (e) Elephant Population Viability Analysis by Dr. R. Sukumar and Dr. N.V. Joshi.

2. *Meeting:* The next Asian Elephant Specialist Group Meeting is scheduled to be held from 20–22 May, 1992 at the SEAMEO–BIOTROP CENTRE (Southeast Regional Centre for Tropical Biology), P.O. Box 17, Jalan Raya Tajur Km. 6, Bogor, West Java, Indonesia. Tel: (0251) 323848. The theme for the AESG Meeting would be the management of Transfrontier Reserves and other large elephant habitats which offer the best chances for the long term survival of the Asian Elephant. Members are requested to prepare background papers on this topic relevant to the conservation of the elephant in their countries.

3. *Elephant Census in Asia:* Following the successful Workshop on Censusing Elephants in Forests that was conducted recently in Mudumalai, it is hoped that the participants would, on their return to their countries carry out line-transects in a variety of habitats to estimate the dung density and also study the rate of decay of elephant dung and the defaecation rate of the elephants. These data would then be analysed at the AECC to arrive at elephant densities that are comparable.

Funds are being sought from SSC and WWF to assist field workers and also to establish a small team of specialists to hold similar workshop in other countries in Asia, especially in Indo–China.

NEWS ABOUT MEMBERS:

Ms SHANTHINI DAWSON: successfully completed her postgraduate research studies leading to Masters Degree at Oxford University on the field work she carried out in South India in estimating the numbers and densities of Asian Elephant using indirect methods. Her work was supervised in Oxford by Dr. Malcolm Coe.

Dr. R. SUKUMAR: was awarded the Fulbright Scholarship to spend 9 months at

Princeton University in USA. Dr Sukumar would be away from August 1991 to April 1992 during which time be would concentrate on analysing the data from the 50-ha plot where he and his co-workers are studying the dynamics of the entire plant and animal communities over a long period of time.

Mr. J.C. DANIEL who was the first Chairman of the Asian Elephant Specialist Group and has been a powerful influence in the development and progress of the AESG. He is the Curator of the Bombay Natural History Society. He plans to retire early this year and devote much of his time to overseeing and devloping the BNHS Elephant Programmes in India. The AESG takes this opportunity to wish Mr Daniel every success in his new assigment.

Mr. Lyn de Alwis, Chairman of AESG continues to act as consultant to the Singapore Zoological Gardens after his retirement in Sri Lanka as Director of the Department of Wildlife Conservation and Director of the Zoological Garden. In Singapore, he is involved in establishing the Night Safari Park at the Zoo which will provide not only great recreation to the urban people in Singapore but will also facilitate the breeding of many endangered species in semi-natural conditions. This is the way all Zoos should develop - away from cages and towards creating a much saner environment for the animals in captivity.

Mr WIDODO SUKOHADI RAMONO from Indonesia is now the Chief of Species Conservation at the Directorate-General of Forest Protection and Nature Conservation. Elephant conservation in Sumatra owes much to the efforts of Mr Widodo under whose management the successful elephant translocations were carried out in Sumatra. It was Mr Widodo who revived the art of elephant training and domestication in Sumatra since it disappeared with the demise of the power and influence of the Sultans and the arrival of the Dutch Colonial Powers.

SINGAPORE'S BRUSH WITH WILD ELEPHANTS

Pulau Tekong is one of Singapore's off shore islands only a stone's throw from the Southern beaches of Malaysia's Johore state. It is approximately 7 km long and 4 km wide. It is a 20-minute launch ride from a small jetty on Singapore's east coast fishing village of Changi.

Once a fishing village itself, the island is today the property of the Singapore Armed Forces. The luxuriant natural vegetation laced with groves of durian and jak and several tracts of coconut, rubber and oil palm, seem to help the soldiers forget the rigours of their exacting duties. To the rest of Singapore, Pulau Tekong is a deserted island best left alone.

But the cool breezes from Tekong also reach the coast of Johore. To a herd of harassed elephants cornered in a dwindling forest on the south-east, these breezes brought good news. Yielding to temptation, three adventurous young tuskers, decided to brave the sea one moonless night in May and seek the greener pasture beckoning them.

Imagine their delight at what they saw as they padded across the opposite beach: healthy young coconut palms and succulent banana trees, gourmet items in an elephant's diet. They tore the trees apart, feeding greedily and wastefully. Picking a frond or two from one tree, they felled the next. They demolished a few hectares in that first frenzied onslaught.

To all intents and purposes, they had arrived in paradise. But in the morning they were roused by that horrible human scent in the air followed by those dread voices. "We had better

be careful" thought the elephants and began, with a little jungle humour, their game of hide and seek with the Army.

Soon the ever vigilant soldiers knew something was wrong. How did coconut trees get uprooted and oil palms lose their crowns when there was neither wind nor rain? And what was causing these round 'craters' in the soft mud? An enemy invasion? No. Enemies don't start by pushing down coconut palms. Because of the sheer improbability, no one dared suggest it could be the work of elephants. And even later when a night patrol claimed they had seen three elephants streak across their headlights they were, at first, laughed off. "Elephants on Tekong? Impossible".

But no. Two days later someone picked up the tell-tale droppings, the size of honey-dew melons. At the Zoo the "productions" were identified as elephant dung!

The news created a sensation. The media consumed it with relish. Many Singaporeans received a nasty jolt. Some still didn't believe it, dismissing it with an "elephants can't swim" tone of finality. Others didn't comprehend, thinking that what the Press was trying to say was that the Zoo had taken three of their elephants to Tekong. Well meaning but somewhat emotional "Conservationists" suggested letting them remain on the island.

But the Armed Forces reacted with customary pragmatism, speed and efficiency. The problem had to be tackled before a confrontation developed. No army in the world have the hardihood to take on rampaging wild elephants, least of all "ship-wrecked" ones on a small island. So they quite naturally and rightly turned to the Zoo for help.

Although not geared to capture, domesticate or translocate full grown wild elephants, the Zoo was aware of the part it had to play. We all felt we had a responsibility by these displaced animals from a humane as well as conservation point of view. These are endangered animals and must be quickly returned to the wild.

It was obvious that the elephants had come from Malaysia, so we should first consult the wildlife authorities there. Fortunately the Zoo and the Malaysian Wildlife authorities maintain excellent relations and share their knowledge to mutual benefit.

When apprised of the strange goings-on on Tekong, the Director-General was slightly amused at first but then said "Those are our elephants from Johore, but now that they are on Singapore soil, they are yours. If you like, our elephant Capture and Translocation team can get them out of the island for you". What a wonderful response, what a relief? I felt a thrill, too, for this is the kind of sharing of knowledge and expertise which the Asian Elephant Specialists Group (AESG) of IUCN strives to achieve.

The Director General of Wildlife Mr. Mohamed Khan is a member of AESG and so is Mr. Sharif Daim head of the special team. The operation was in safe hands. The two governments readily agreed, so why wait? Mr. Bernard Harrison Executive Director of the Zoo was the perfect Co-ordinator and lost no time in putting the act together. This was Friday, Sharif will be in Singapore on Sunday to plan the capture and translocation. Nostalgia gripped me as I recalled our own Deduru Oya operation some 10 years ago.

Everything was falling into place nicely. I was touched by the concern being shown for the safety of the elephants. Army exercises on the island were suspended and firing practice had virtually ceased. In true military fashion an Operations Room had been organized and, on a large map, daily patrols pinned the sites of elephant activity. But the elephants remained quite invisible. Not once did the seventeen or eighteen search parties hear so much as a branch snap. So the trackers will have to rely entirely on fresh foot prints, droppings and hopefully, broken branches to follow their trail.

Shariff's plan was to send out his capture team first. This consisted of 2 wiry men with flashing eyes backed by a burly marksman in Army fatigues carrying a formidable 458 rifle;

next came a photographer with a sophisticated video camera. Bringing up the rear were 2 officers blessed with the quick reflexes needed to 'fire' the 2 Cap-chur guns and then get out of the way of the enraged recipients. Each had his own walkie-talkie tuned in for instructions from Sharif and Dr. Zainal the Veterinarian who would have to administer certain drugs after the elephants were immobilized.

At 7.30 a.m. on Wednesday 6th June 1990, we set off in convoy after a breakfast which we hoped would last the whole day. We still had no idea where the elephants would be for even a search which lasted until midnight the previous day, drew the twentieth blank. All we knew from the foot print measurements we had taken, was that we were in pursuit of three adult wild elephants at least two of them over 8' at the shoulder.

But we were all optimists, so much so that before we left Camp, Shariff instructed his translocation team in Pahang (150 km away) to start moving and be at the Johore causeway by evening! For a government department that had entered the "translocation game" less than fifteen years ago, this was amazing organization and preparedness.

To enter the dense forest into which we suspected the elephants would have by now withdrawn, we had to traverse five miles of the 30-foot wide main road running along the east coast of Tekong. We had hardly done 3 of this macadamised road with manicured grassy ridges on either side, when, lo and behold, we spotted a mutilated clump of banana trees on the right hand side.

All the vehicles disgorged their contents simultaneously into an excited, scurrying mob. But Shariff took control and with the practised skill of some 200 such operations, gave his instructions in a crisp clear voice. "Kamaruddin, Jaffar take the cap-chur guns, "Prepare for the two big ones first". "Zul and Suvi, take the rifles; Zainal, you come with me".

Between the road and the sea was hardly 100 metres of scrub forest and coconut. If we could keep the elephants in this strip until the darts were 'fired', we would have the operation sewn up. We posted staff at two points 800 m apart where the elephants might make a break for the dense jungle.

It was now just 8.45 a.m. Sap was still oozing from the banana trees so it awas unlikely the elephants had strayed far. And then, as we paced the road waiting for news from the trackers, we heard the unmistakable crash of a coconut tree. We scampered in that direction and for the first time, caught a glimpse of one of the elephants.

Quickly regrouping, the capture team went in hot pursuit at 9 a.m. The elephants stampeded and my heart sank as I saw them trying to break cover near one of the sentries. Miraculously, at that very moment, a truck, quite oblivious of what was going on, came chugging along a dirt track right into the path of the fleeing giants. For our good luck the bewildered driver sped on, fast enough to spin the panicking elephants round and momentarily halt their headlong rush.

Again we had a stroke of luck; for the confused elephants had to cross a storm-water drain to get back to the coconut grove. The 2 men with their cap-chur guns were quick to spot this and lay in wait. Someone warned over the walkie-talkie that there were 3 massive tuskers. He had hardly finished speaking when the elephants broke cover and plunged into the drain, giving the marksmen the ideal 'shot' on the flank. Both guns delivered simultaneously. The 'hurricane' continued in the scrub for a minute or two, and then there was silence.

The tracking resumed. This time the 458 was in the forefront. But after 15 minutes there was still no sign of fallen or of moving elephants. Suddenly the Army radio crackled. The agitated southern sentry announced that the elephants crossed the road 50 metres behind him.

An excited Shariff looked at his watch as we resumed the search on the opposite side of the road. But he was quite sure the darts went

home and with them the required dose of the Immobilon "cocktail". How right he was for 2 minutes later we were staring down at two massive elephants fast "asleep". This was significant for both received the drug at the same time and here they were lying side by side.

Even as we were whooping with joy, Shariff called out urgently "Come everybody, we have to turn this animal on its side". One of the elephants was lying on his chest, a position which causes asphyxiation in a short time. With 20 of us to help, the elephant was quickly on its side and snoring loudly.

The men worked fast and expertly to beat the clock for within an hour the elephants should be ready for the antidote. Shariff and Zainal jotted down all the vital statistics. Everyone remarked on how healthy and clean the animals were. No wounds, no ectoparasites. By 10.20 a.m. both elephants were up and feeding but not yet in the mood to charge at us standing just 10 feet away. What of the third elephant? "We'll tackle him in the afternoon" someone said.

The Army personnel were overjoyed and showered praise for a job done so well and with

One of the bull elephants after it had been tranquilized by the Malaysian Team led by Shariff Daim (AESG Member) with the help of the Singapore Armed Forces. Mr de Alwis (right of the elephant) oversees the operation. (Photo credit: Lyn de Alwis).

There were no trees to secure the elephants to, so Shariff decided to shackle the forelegs with high tensile chains and tie the hind legs to the only saplings available more to anchor than to restrain them. He explained that he had evolved this technique as he had heard of the dreadful consequences of trying to drag the captives using bulldozers. Besides, the gruesome cuts on hind legs from straining on chains or ropes are also avoided.

such confidence and skill. But we were far from finished, because the equally challenging task of getting the elephants out without mishap was yet ahead.

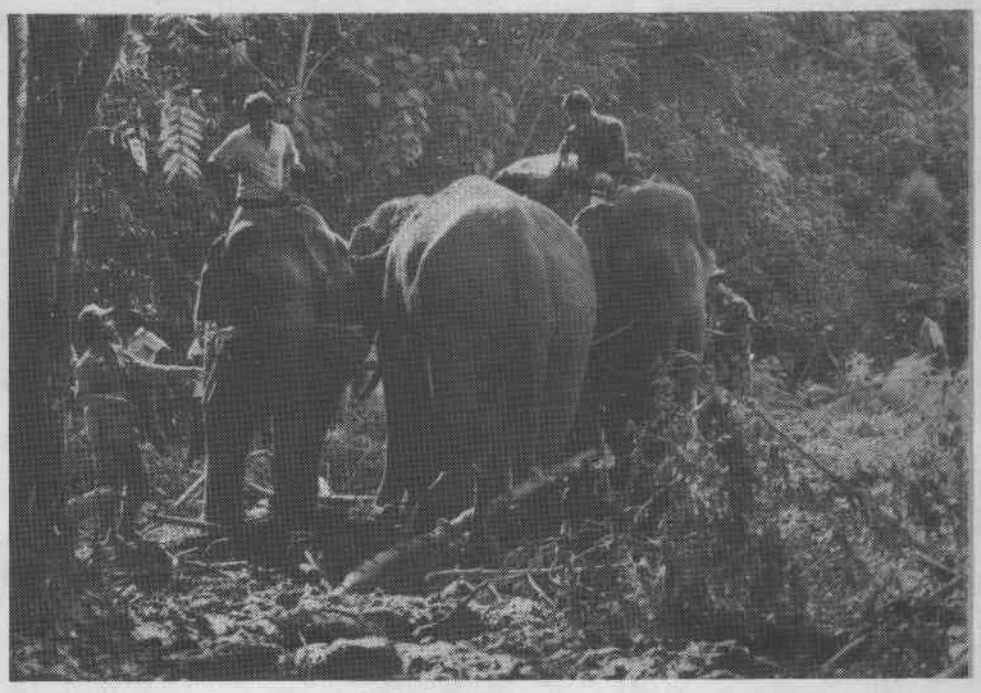
To claim that a translocation is a success it has to be done quickly and wtih least stress to the animals. And the animals' new destination should have sufficient food and water and protection to give them a chance to start a new

life. The Wildlife Department had thought of all this before they came to Tekong.

The most important participants in the translocation process are two tame elephants acting as monitors, and their mahouts who are well trained to reassure the new captive that things are not as bad as they appear and would he kindly co-operate by getting into the transport provided. The transport consists of two solidly built trucks. Each truck has 10 wheels for obvious reasons. The all-metal body is open to the sky and can also be angled to suit the ramp built to load the elephant.

elephants and trucks to and fro. Without this logistical support the operation may have taken weeks to complete.

The whole convoy of elephants, trucks, jeeps and men from Malaysia arrived at the Johore causeway in the early hours of Saturday morning. Bernard had done the needful and the Customs, Immigration and Health authorities realized this was one border crossing that needed neither pen nor paper. The traffic police took over from there and the elephants were driven along the smooth and colourful Bukit Timah Expressway like State guests.



Koonkie elephants on either side of the wild tusker on its way back to Malaysia from Singapore. (Photo credit: Lyn de Alwis).

But to get all this on to an island in the middle of the sea is quite a different proposition to a comparatively straight forward exercise on land. But the Malaysians are expert in this, too, having had to translocate whole herds of elephants stranded on islands in the middle of massive fresh water reservoirs. But what was remarkable was the Singapore Army's ability to provide suitable sea-going craft that could take

Col. Wee and Major Samad took over at Changi and Tekong and 30 minutes later the monitors were being led to the three captives. "Where do you want the ramp, Shariff?" asked the Major. A bulldozer and back hoe were conjured out of the tall grass and the job was done.

The tuskers, stubborn at first, yielded to pressure from the monitors at their side and

started down the road leading to the ramp. Trying to salvage a little pride, so to speak, they would stand their ground until coaxed with a coconut branch.

Four hours later they were on their way home standing regally, tusks gleaming in the evening light.

That this entire operation was performed with speed, confidence and without fuss or fan-fare was a tribute to the team-work and professionalism of all concerned. It all stemmed from the common and noble intent of both Singaporeans and Malaysians to ensure that the elephants were given a new home and a new lease of life. It was an operation worthy of emulation by other countries in Asia which have to rely on capture and translocation to save the lives of animals driven to despair by our thoughtlessness.

(Lyn de Alwis)

A preliminary report on the WORKSHOP ON CENSUSING ELEPHANTS IN FORESTS

organized by the Asian Elephant
Conservation Centre (AECC)

and held at the Mudumalai Wildlife Sanctuary
Tamil Nadu, South India

and

Centre for Ecological Sciences
Indian Institute of Science
Bangalore 560 012, India
2–10 January 1991

The Workshop on Censusing Elephants in Forests was made possible by the financial assistance provided by the WWF International and the International Union of Biological Sciences (IUBS). The AECC would like to express its thanks to these funding organizations for their assistance.

The participants arrived in Bangalore on 1 January and were then transported to the Mudumalai Wildlife Sanctuary in Tamil Nadu on 2 January and were housed at Rest Houses at Teppakadu, Masinagudi and Abhyaranyam. The Workshop commenced the next day 3 January and the initial ceremoney was held at the Bandipur Wildlife Sanctuary in Karnataka State with Mr Subash Chandra (from Bandipur Sanctuary) as the Chairman.

Dr R. Sukumar, the Co-ordinator of the AECC and Deputy Chairman of Asian Elephant Specialist Group (AESG) opened the meeting with few words of welcome and explained the Agenda for the day and the nature of the programme that followed.

The following speakers were part of the Faculty that provided the lectures on the first day: Dr. V. Krishnamurthy, Prof. D.K. Lahirichoudhury, Mr. Ajay Desai, Dr. Charles Santiapillai, Dr. Richard Barnes, Mr. Ullas Karanth and Dr. R. Sukumar.

Dr. V. Krishnamurthy discussed the census techniques he and his colleagues have used in the field before modern sophisticated computer-generated methods were available

to them. His work was mainly in the Southern States of India and involved identification of herds and lone animals and recording them along transects. In all they were able to record 2,994 elephants in an area of 10,736 km^2. Dr. Krishnamurthy's method of observing elephants and recording them over a long period of time, despite any inherent bias and errors, gave results that were later found to be reasonably close to the estimates arrived at by using more objective methods.

Prof. D.K. Lahiri-Choudhury gave his presentation on the situation of the Elephants in North-east of India where it is estimated that between 8,500 and 11,500 animals range. He then classified the methods then available for estimating elephant numbers viz. Direct methods of observation either from the air or on the ground. On the ground such surveys could be carried out foot, in vehicles, on elephant back and from platforms or machans. He also discussed the line transect methods and the use of quadrats but went on to explain the "rolling count" methods that he had been using in NE India. The area covered was vast: 14,626 km^2 of which he chose an area of 1,563 km^2 where intensive studies were carried out in smaller samples (10% of the area at a time). The counts gave an estimate of 853 elephants in 1,563 km^2. But there was some confusion about the standard error range and Dr. Sukumar came to the rescue.

Mr. Ajay Desai then discussed the estimation of elephants in the light of his experience in South Indian States. He felt that Registration counts were not absolutely reliable and that a combination of indirect as well as direct methods needed to be employed depending on the nature of the terrain and visibility of the forest.

Dr. Charles Santiapillai contrasted the situations in Sri Lanka and Sumatra where in one case (Sri Lanka) it would be possible to visually observe the elephants in the study area (Ruhuna National Parlk: area 140 km^2 in Block I) and count them especially around the water holes while they graze in the short grass. The census was carried out seasonally but the estimate for the population size was made at the peak of the drought when most of the water holes dried up and so it was possible to count most of the elephants at the remaining two or three areas. In this way, a minimum estimate of 65 animals in Ruhuna NP gave a crude density of 0.46/km^2.

By contrast, the situation in Sumatra proved more difficult for the researchers (Raleigh Blouch, Haryanto and Simbolon in 1984 and 1985). The dense and tangled vegetation of the tropical rainforest made visual observation difficult and so much of the estimation was made from visiting areas and talking to people and extrapolating from known numbers. In most instances, the estimates had been under rather than overestimates. In a patch of forest where 80 elephants were thought to occur, when the population was flushed out, 232 animals emerged!

Dr. Richard Barnes provided very valuable information on the use of indirect methods in estimating elephant densities in tropical Africa. Counting elephants in dense forests at was shown above is difficult and there are more sources of error that can creep into the methods and analysis. In estimating elephant numbers in dense forests there are 4 basic steps to remember:

1. Estimating density of droppings using line transects
2. Estimating the number of droppings produced per elephant per day
3. Estimating the rate of decay droppings
4. Combining the estimates of defaecation rate, dropping density and decay rate to obtain an estimate of elephant density.

He then went on to describe the way elephant census was carried out in Gabon where poaching was a serious threat. The Elephant distribution was affected by roads and villages. Line transect method involving

dung counts gave an estimate of 70,000 elephants in Gabon or a crude density of 0.3 to 0.4 per km^2.

Mr. Ullas Karanth then described the line transect method that he has adopted at Nagarhole NP. As his objective was to get estimates of absolute densities he discarded the methods that are based on indirect evidence. He set up 8 permanently marked transects covering 19.3 km in a variety of habitats. Each transect was walked twice per month between July 1986 and July 1987. Transects were walked in two time blocks: between 0600–0900 and 1600–1900 hrs. For each animal group sighted, the species, number, sighting distance and sighting angle were recorded. Range finder was used for measuring distances. From these measurements it was possible to estimate accurately the number and density of large mammals, using standard methods.

4 January 1991: Field Exercises commence. Instructors Ms Shanthini Dawson, Mr Ajay Desai, Mr Lewie Dekker and Mr Surendra Varman.

Participants were divided into 4 groups and two groups followed the demonstrations on the line transect method using dung piles while the other two followed the line transect method using animal counts. These exercises were held in the Mudumalai forest in habitats with good visibility (deciduous semi-evergreen forest interespersed with teak). In this exercise the use of hip-chain, pedo-meter to measure the distance in setting up line transects was demonstrated and the use of compass in setting along a straight course was also shown and all the participants took turns in performing and recording the data.

In the Indirect method: A km distance was travelled and all dung piles found on the line and on either side of the transect were spotted and their distance from the transect line was accurately measured. The state of the dung piles was categorised as to A. B, C1, C2, D and E. When the dung pile was spread over a distance, the distance was measured from the centre of the pile. In the direct method: Using a compass straight line transect was made and all animal sightings were recorded (number, species) and the distance was measured using a rangefinder and the angle was measured from the compass.

In the afternoon, the data so gathered by the participants were used in the computer analysis by Mr Lewie Dekker and Dr R. Sukumar. Participants were given opportunities to plug in the values themselves and learn how to calculate dung density which is needed for later analysis of the elephant density.

5 January 1991:

The same exrcises were carried out by the other two groups. In the afternoon, Ms Shanthini Dawson demonstrated the method to study the dung decay in the forest. Initially 50 freshly deposited dung piles must be recorded and numbered and these piles would then have to be examined for the state of decay on the 3rd; 5th and 7th days. After that, they had to be inspected at weekly intervals and the stages of decay (A, B, C1, C2, D and E) recorded. As decomposition varies with season and habitat, dung piles must be chosen from a variety of habitats.

6 January 1991:

A discussion was held at the Hall in Masinagudi on the methods adopted in the field.

Mr Lewie Dekker gave a detailed lecture on the do's and don't's of the line transect method using dung piles and given the large number of Indian participants present and many being most contentious there was much fun and fireworks in the discussions!

If there are two Indians, there would be three opinions and it was quite evident at times but this generated an enormous interest and lively arguments which galvanized the entire participants and baffled those who came from Burma, Laos and Vietnam who found the Indian delivery of English very much similar to a fire cracker going berserk! At several times, Indian

speakers were pleaded and cajoled into talking slowly and a few did succeed!

Mr Lewie Dekker recommended that at least a minimum of 5 separate transects each of 2 km length must be traversed and a minimum of 150 dung piles must be recorded in order to achieve reasonable accuracy. The transects must be placed systematically and not randomly. The transects should not follow the river banks but instead should proceed perpendicularly from the river into the forest. An important point to note is that no dung pile on the transect line must ever be missed!

Ms Shanthini Dawson then gave a clear concise lecture on the use of dung piles in the indirect estimation of elephant numbers and densities. Her method had been tested in field trials and findings were the basis for her M. Phil dissertation at Oxford University. Therefore her method could form the firm basis for estimating elephant numbers and densities in areas where it is virtually impossible to see and count elephants (e.g: many dense tropical rainforest habitats throughout Asia especially Indo-China and Indonesia and Malaysia).

Dr Richard Barnes then gave a lecture on planning the surveys in dense forests and reiterated the fact that in all the opeartions, the most overriding factor must be the safety of the participants. Surveys must be so conducted as to get maximum data with minimum cost. In Gabon, Dr Barnes and his team used boats to travel from one area to another and walked 5 km from the river bank before commencing the transects.

Dr Sukumar explained the likely complications that might arise when carrying out line transects using dung piles in extremely hilly terrain where the surface area could be much larger than what one would measure from a map. This is particularly relevant in very mountainous areas as in Xishuangbanna Nature Reserve where 94% of the terrain is mountainous (Santiapillai, pers. comm.).

In the afternoon, the participants were taken on a tour of the Mudumalia Wildlife Sanctuary. Some groups were fortunate enough to see herds of elephants, packs of wild dogs and one group even managed to see a leopard!

7 January 1991:

This was the day when the participants applied the theory that they learnt in the field. Five groups of participants went with their group leaders (Dr. Richard Barnes, Mr. Lewie Dekker, Ms Shanthini Dawson, Mr. Ajay Desai and Mr. Surendra Varman) to Nadugani and cut the transects on their own in the evergreen forests. The terrain was rugged and hilly and was a superb area to test the performance of field workers and separate the scientific sheep from the goats! (some fainted half way, some could not talk at the end of the survey and some collapsed at the end of the transect, while some wise people prudently stayed back at the house!). Each group was given 3 hours to cut a km long trail along a straight course using compass and measuring the distance of the dung piles from the centre line. None of the groups managed to travel 1 km distance within the 3 hrs period, given the nature of the terrain which was steep, rugged and crossed with rivers and ravines. The distance travlled ranged from 669 metres to 800 m, and the number of dung piles counted ranged from 0 to 11.

8 January 1991:

The groups met in the Hall to discuss the findings from yesterday's ground surveys and in the afternoon were taken to the Bandipur Wildlife Sanctuary to see the Wildlife.

9 January 1991:

Return to Bangalore via Mysore. Diesel shortage on account of the Gulf crisis and so the return journey was delayed a bit.

10 January 1991:

Concluding session at the Centre for Ecological Sciences with Mr Alva (Chief Wildlife Warden of Karnataka State) as the Chief Guest. Also in attendance were Mr Lyn de Alwis

Chairman of the AESG, Mr J.C. Daniel Curator of Bombay Natural History Society, Dr R. Sukumar Deputy Chairman, AESG and Coordinator of AECC, and Dr Charles Santiapillai Executive Secretary, AECC.

Dr Sukumar welcomed the Chief Guest and reviewed the events that took place in Mudumalai. Mr Lyn de Alwis thanked the faculty in general and Dr Sukumar in particular for holding such a useful workshop which would be invaluable for many elephant specialists working in dense tropical forest habitats. He urged the need for AESG and AECC to liaise closely with the development agencies and planning bodies in Governments to reconcile elephant conservation with economic development. He was particularly pleased to see the participation for the first time of two Burmese and hoped that in the next meeting it would be possible even to get some Cambodians to attend.

Mr Alva then expressed his pleasure to be at the meeting and was very pleased to know that the workshop was such a useful exercise. He referred to the plight of the Asian elephant in South India where the conflict between man and elephant is serious. Elephants are extinction prone when confined to small patches of habitats and this is the crux of many elephant-human conflicts in India. He urged the AECC to address the elephant-human conflicts and arrive at solutions that would enhance elephant conservation on one hand and improve the economic well being of the poor people living in the periphery of the elephant ranges.

Mr Lewie Dekker then summarised the methods used in estimating elephant densities and this generated sufficient argument from the usually vocal Indians in the room! Ultimately, after a long and interesting session of arguments and hair splitting, the group agreed that the dung count method, despite its inherent bias, is still about the best method available when estimating elephant densities in dense tropical rainforest habitats. Two Cambridge statisticians who descended on the final day, much to the dismay of a few, added some modifications to the computer-based calculations to make the estimates even more reliable. With that, the Workshop was closed officially.

In the evening, there was a dinner for all the participants. The participants left Bangalore the next morning. Dr Sukumar and his small team (especially Santosh and Uma) deserve high praise for the excellent workshop they helped organize. Now AECC needs funds to follow up with field work.

Charles Santiapillai

BIRTH OF AN ELEPHANT

There is great excitement at the Corbett National Park. Something unusual happened there on February 18: A calf was born to a riding elephant, Pawan Pari. This is the first such case in the 55-year history of the Park. There are about a dozen riding elephants in the Park, who come across wild ones regularly.

I was aware of the pregnancy of Pawan Pari. She had mated with a wild tusker on April 4, 1988 during their three-day romance. I was told about this by her knowledgeable mahout, Nissar. He had been in charge of Pawan Pari for nine years.

I have a particular attachment to this elephant. During my frequent visits to the Park, she had been of great service to me. As the gestation period is about 22 months, I was at the Corbett in anticipation of the birth.

The calf was born in the night at 10.30. The mother was chained alone in her open shed. During the delivery, she trumpeted twice. The mahout's assistant, Sardar, who was awake, found her calls strange. He thought, maybe a tiger had wandered too close to her.

The Khinnanauli Rest House, where Pawan Pari is stationed, is a small complex in the thick

of the forest. All the wild animals have a free passage through it. Sardar got hold of a lantern and went to check the elephant. And there it was - the new- born calf. Within minutes, the entire staff of the Park was up.

The first priority was to guard the calf from the predators, as the shed was open. Second, the mother was be taken care of with suitable feeding and medication.

I was among the first few persons to see the new-born calf in the morning. It was a female. She was tied near the mother from where she latter could see and touch the calf all the time.

The 10-hour-old calf was round, healthy, pinkish grey, and hairy. Her eyes were large and blood-shot. We measured her height to be 2 feet 8 inches at the shoulder. Though we had no weighing scale, the mahout estimated the weight to be between 80 and 90 kg.

As was to be expected, the calf had strong sucking instinct. She moved her trunk up and down, here and there, exploring for a place to suck. She even tried to suck at the pillar of the shed. She would rumble loudly, now and again, on not being able to find the right place to suck. The mahout tried to guide her to the mother, whose height was proving too much.

Unexpectedly, the mother was not making any effort to feed the hungry calf. Perhaps she was not keen on feeding the calf in the first hours for it might not be required, or maybe they were not in the right posture for the purpose. But nothing could be done about it. The mother could not be unchained, for fear that she might behave unpredictably in these early hours of motherhood. The calf too could not be left lose as even two mahouts were finding it difficult keeping it near its mother. Eventually, the calf was bottle-fed a few times on the first day.

I spent the next few days watching the mother and the calf. The two-day-old calf assumed much weaker looks. She was unsteady in her feet. She sucked regularly but for a few seconds each time, till her wobbling knees would give way and she would fall.

From the accounts of many experts and researchers, who have observed new-born elephant calves in the wild, it appears they mistakenly assumed two-three days old calves to be few hours old. Or Pawan Pari's calf was exceptionally healthy on the first day.

On the third day, the mother and the calf were bathed. This is a ritual elephants enjoy the most.

At noon, when the sun was high, the two were taken to a sunny patch and bathed in hot, medicated water, and scrubbed thoroughly with stones. Their eyes were washed with boric acid.

Both appeared more happy and active after the bath.

The Corbett Park, unfortunately, has no provisions for elephant post-natal care. Nourishing diet and medicines for the mother too were late in coming. Fresh milk for bottle-feeding the calf to supplement the mother's milk was not arranged.

While the senior officials were conspicuously absent, the junior ones were indecisive and wary of taking any action, even if it was a minor question of bottle-feeding the calf. The additional staff requested to look after the minute-to-minute needs of the mother and the calf were grumbling as they had no clear-cut orders and were not provided proper boarding and lodging. A shed for the mother and the calf had not been prepared even four days after the delivery, inspite of the grave danger from predators.

One only whishes that Corbett will not repeat the case of Phool Chand. Phool Chand was a few months old wild elephant calf when it was brought in an injured state from the forest and kept at Corbett Park's Dhikala Rest House complex. After its initial care, when it was some what healthy, it was left in inexperieneed, careless hands and was not properly provided for. It became so weak that it had to be shifted to the Kanpur zoo.

Pushp K. Jain
(reprinted from **Times of India** 13 March 1990)

ELEPHANT MANAGEMENT IN CAPTIVITY

BIRTH OF A MALE ELEPHANT IN CAPTIVITY IN SRI LANKA

The birth of the first male baby elephant occurred on 13 September 1989. It was born in captivity at the Morahena Kottawa Estate belonging to our family. The female when she gave birth to the male calf was 18 years of age. The bull elephant that sired the offspring was about 20 years of age belonging to the Pasgama Devalaya (= Temple) in Aranayake.

The she elephant was treated with local medicine under the supervision of the elephant veterinarian, Mr Niyanapalawa. The assistance of a veterinary surgeon was sought once for treatment when the womb appeared to be festering, just one week after the calf was born.

The calf was suckled by the mother while she was fed mainly with kitul (a kind of palm tree), Jak *(Artocarpus* sp.*)* leaves, grass and branches from local trees such as *Ficus religiosa, Cocos nucifera* etc. About 100 kg of the above varieties were given to the mother every day. Only a very limited quantity on sweet food such as banana, papaw and pineapple was given daily. The calf was wormed when it was 4 months old and later when it was 8 months old. By the time the calf was 6 months old, it began to try feeding on what the mother was being fed.

By October 1989, the calf was 1.1 m high. When the baby elephant was about 6 months of age, it was chained close to the mother. During the first 4 months, it was kept inside the camp to protect it from the weather. From the age of one moth onwards, the calf was bathed along with its mother. At about the age of 6 months, the calf was already well on its way to understand a few commands from the mother's mahout! Now he seems to understand very well the commands given by the mahout.

The first public performance of the baby elephant was its participation at the Bellanwila Temple's Esala Perahera (a maginificent procession of elephants held annually both in Kandy as well as in Colombo), where he performed very well indeed. After the ceremony, both mother and son were taken to Bandaragama where the Chief mahout resides. Now the baby elephant and its mother are being looked after by the Chief mahout.

by Wawita Siripala

(This information from Mr Siripala was passed on to the Newsletter by Mr Vasantha Nugegoda).

REGIONAL NEWS:

1. SRI LANKA

ELEPHANTS SLAUGHTERED IN CIVIL WAR

Elephants, which are widely regarded by Sri Lankans as a national symbol, have become the latest casualties of the war between the government and Tamil separatist guerrillas.

Guerrillas seeking independence from the majority Sinhalese community killed 50 elephants between January and August. The director of wildlife conservation, S.W. Kotagama, says this is the highest kill rate in recent times.

Not since the days of British rule, when elephants were killed for sport and to protect crops, has there been such slaughter.

Experts estimate that there are no more than 3,000 elephants in the country, compared with 10,000 at the turn of the century.

Tamil separatists have been felling timber in the forests of the north and east to build fortifi-

cations and raise cash. Elephants which get in the way of the operations are killed. Twelve elephants were killed over a period of several days in Lahugala recently and 16 were found dead with gunshot wounds on the Kumana-Panama road, blocking traffic.

Some elephants have fallen victim to landmines intended for government troops. One was recently found writhing in pain with her baby beside her after stepping on a mine. Other elephants have been wounded in firefights between guerrillas and government troops.

The guerrillas' tree-felling is also destroying the elephants' habitat. Government troops recently seized 200 bullock carts and three bulldozers allegedly used by rebels to transport timber, and have also found several timber yards set up by guerrillas in the forests.

Several lightly armed wildlife officials have been killed by the separatists. Four employees of the wildlife conservation department, including an assistant director, were recently shot dead.

Wildlife officials in the forests of the south have also been intimidated by Sinhalese insurgents from the anti government Janata Vimukthi Peramuna (JVP), who, in several incidents, have seized the officials' guns.

Even before the outbreak of the separatist war, Sri Lanka's elephants were on the retreat in the battle with villagers for space and food.

And as development projects and resettlement programmes opened up the forests, so the elephants found themselves squeezed into pockets of the jungle surrounded by villages and clearings used for agriculture, which often lie close to the elephants' migratory paths.

When elephants eat or flatten large areas of plantations and food crops, farmers often retaliate by shooting them.

The huge Mahaweli development programme for irrigation, land settlement and electricity generation has destroyed large areas of forest, but the government points out that the scheme has also created four national parks. Wasgomuwa, Maduru-oya, Radenigala and Flood Plains, together with elephant "corridors".

Kotagama says however, that much of the environmental strategy for Mahaweli has not been implemented, resulting in large-scale damage by elephants.

Damage has also been heavy in areas where no allowance for environmental impact was made in development plans. The Sevenagala sugar cane plantations and estates owned by the Pelwatte Sugar Company, for example, have both suffered over 250 million rupees (US$6.25 million) worth of damage by elephants..

The government is now drawing up a management plan for elephants. A meeting of wildlife specialists, officials and environmentalists has recommended :

- area surveys to assess elephant numbers and the capacity of the land to support them.
- a compensation scheme for crop damage and loss of life.
- establishment of a breeding centre and orphanage in the Mahaweli region.
- a training programme for elephant vets and wildlife department officials.

The meeting also advocated the driving of herds into protected areas and seting up university research programmes.

by Mallika Wanigasundara
(reprinted from **The Jakarta Post** 1 Nov. 1990)

2. INDIA

SAVING ELEPHANTS FOR POSTERITY

D.K. Lahiri-Choudhury writes on Project Elephant which is likely to break new grounds in the field

PROJECT Tiger: One of the great stories of conservation in the last two decades, was launched in India on April 1, 1973, at the initiative of the World Wildlife Fund. Tiger reserves helped to establish in India the concept of ecosystem conservation-a great leap forward from the era of game laws and "Closed season" regulations.

Project Elephant, now under active consideration of Government of India, is essentially an Indian baby. A modest outlay of Rs 20 crores is being contemplated for the project for the remaining years of the Eighth-Plan period. It is likely to break new grounds and offer a model for such project elsewhere in south and southeast Asia.

The latest estimate (1985) would put the number of elephants in India somewhere between 12,000 – 16,000, found in four widely separate geographical regions : South India (Kerala, Karnataka, Tamil Nadu and, of late, Andhra Pradesh): Eastern India (Orissa, south Bihar, south-western part of West Bengal, and very recently Sarguja civil distriet in the northeastern corner of Madhya Pradesh); North India (sub-Himalayan Uttar Pradesh); and North East India (Arunachal Pradesh, Assam, Manipur (seasonally migrant from Burma), Meghalaya, Mizoram, Nagaland, Tripura, and northern Bengal). Without a special effort about 30% to 40% of these animals may not have a chance of long-term survival.

Project Elephant is likely to differ in many significant ways from Project Tiger in its approach to consevation. Project Tiger concentrated exclusively on selected sites of limited extent. As Mr. Sankhala, the first Director of Project Tiger put it, the project was "committed to the philosophy of total environmental preservation in selected areas management limited to eliminating or at least minimizing human disturbance and to repairing the damage already done by man."

In practice, the management of Tiger reserves was based on the broad principle of "core and buffer", absolute protection to the former and exploitation according to the working plan in the latter, which in effect meant exploitation and human interference as usual in the buffer zone. The hypothesis behind the concept was the "spill over" theory : that wildlife, eventually would spread out from the absolutely protected core to the buffer where conditions were expected to improve under proper management having a wildlife bias.

The Ministry of Environment and Forests, is currently hammering out the final shape of the project. The rationale seems to be that elephant reserves established under the project should aim at ensuring the longterm survival of identified elephant populations by protecting their entire ranges, consisting often, of overlapping home ranges. Home range means the area actually used by an animal or a group of animals; and population, in the case of elephants, may be defined as animals sharing the same territory.

Elephants are long-ranging animals and an entire population may use a very large area. The main problem of elephant preservation is one of preserving the geographical extent as well as the quality of wildlife habitat of these ranges. Unlike the tiger reserve, this cannot be done for elephants in selected parcels of forest of limited extent. If the conservation and management of entire elephant ranges or their selected parts is to be the principal objective of elephant reserves, the core-buffer concept will be virtually useless.

Nevertheless, the principle of total protection will continue to apply to crucial habitat pockets, such as areas where elephants take shelter during the "pinch" period; cover used as daytime refuge for nocturnal foraging: salt-licks to which elephants return periodically for health-giving minerals and salt; and corridors linking different parts of an elephant range. The management plan for an elephant reserve, therefore, will have to take into account the range-utilization strategy of elephants, as these crucial habitat pockets may very well be located in scattered points in the range, not concentrated in one or two compact pockets as in a tiger reserve.

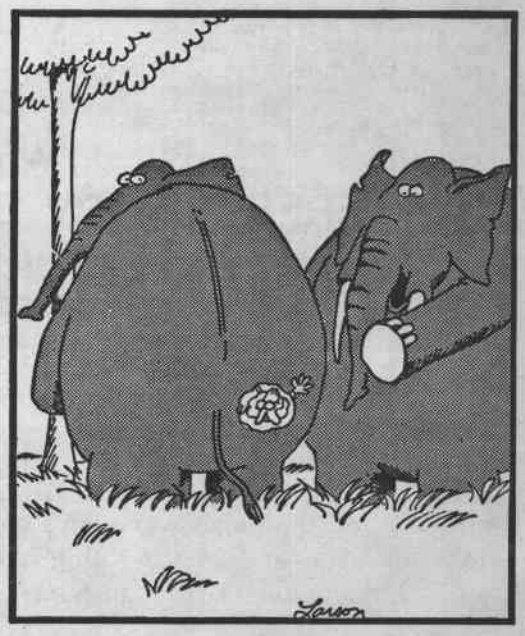
Moreover, unlike the core areas in tiger reserves the entire range of an elephant population cannot, in Indian conditions, be insulated from disturbance by man. Because range management involves managing very large tracts—much larger than the average tiger reserve—socio-economic problems arising from the establishment of elephant reserves should be a major concern of the managers. As a result the "philosophy" may have to be changed to an adjustment between the needs of wildlife and environment, and needs of man, particularly of people in the fringe areas dependent on forest resources for their subsistence.

Another, equally important, objective of Project Elephant would be devising plans for managing smaller populations or groups. This would extend the scope of the project beyond demarcated conservation areas like elephant reserves to the management of the species as a whole. Thus, minimizing man-elephant confrontation which has reached crisis level in some areas would be a crucial task of Project Elephant. In 1988 in North Bengal 59 people lost their lives to elephants. In 1989 upto mid-December 52 people had been killed in Assam by elephants, the North Bengal figures for the year coming not too far behind. In 1990 upto 15 October, 46 people had been killed by elephants in North Bengal, and the worst phase of the depredation season is yet to come. Elephants from Tamil Nadu straying to Andhra Pradesh: from Porahat Forest Division in Singbhum civil district of Bihar to Sarguja civil district of Madhya Pradesh: from Dalma Wildlife Sanetuary in Bihar to East Midnapore Forest Division in West Bengal have wrought havoc. The success of Project Elephant may very well be judged in these areas rather than in the high-profile Elephant Reserves.

The last question : why is the elephant so important? Apart from the position the elephant has always occupied in India's history and culture, the status of the elephant, because of the large demand the huge animal makes on its environment, indicates the health of its habitat. A preliminary study has identified some target areas in the country for setting up elephant reserves. It is no surprise that these represent most of the meagre residue of close canopy natural forests still left in India-exceptions are Madhya Pradesh (barring the recent incursion from Bihar) and Maharashtra, where there are no elephants, probably due to historical reasons.

Project Elephant may be our last chance to save for posterity these areas of highest species diversity consisting of the elephant and its associate biota. Project Tiger and Project Elephant, therefore, may be said to represent separate tactical approaches to the same ultimate strategie objective.

(reprinted from **The Saturday Statesman** 10 Nov. 1990).



"Whoa, Frank....Guess what youuuuuuuuu sat in!"

3. INDIA

INDIA PLANS RESCUE OF ELEPHANTS

INDIA is planning a concerted campaign to ensure the survival of its hardy population of 20,000 elephants, which are being forced into a shrinking habitat because of the plunder of forests by rural peasants.

The drive will be based on the Government's successful Operation Tiger, which has ensured the survival of the species four decades after the officers of the Raj went home with their hunting rifles. The tiger population is now around 2000.

Project Elephant, to be unveiled early next year, will be a low-budget operation, with about $ 15 million allocated over a four-year period.

The elephant population, which has increased by almost 10 per cent in the past decade, is described by government officials as stable.

The project will focus on conservation programmes in areas identified as elephant reserves.

Attempts will be made to help rural populations find an alternative fuel to forest timber and the campaign against the ivory trade will be intensified.

The natural habitat of India's elephants is being eroded by unrestricted cattle grazing and by villagers cutting down trees and bushes for fuel. Poachers also continue to roam unhindered through some areas of the main elephant country of southern India, having paid hefty bribes to wildlife officers and police.

There are hardly any bull elephants left in some pockets of the south and poachers are even slaughtering young males for their tiny tusks. But the Indian elephant is threatened less by poachers' bullets than by the need of peasants for wood, which is extremely expensive in India.

The plunder of forests has taken on staggering proportions, with forest cover reduced by half in four decades, leaving just more than 10 per cent of India covered by trees. An estimated 80 million cattle wander freely through the countryside, preventing forest regeneration.

Project elephant will be a far more complex operation than Project Tiger, which simply required the establishment of relatively small reserves. The elephants wander over vast areas, often raiding farmers' crops and even killing people when they are hungry and distressed.

Christopher Thomas
(reprinted from **The Times** London 29 Nov. 1990).

4. INDONESIA

COUNTERFEIT IVORY BEING SOLD AS REAL THING IN LAMPUNG PROVINCE

Plaster items sold as ivory are produced in large quantities and sold in the free market in Lampung, a forestry official has said.

The quality of the bogus ivory is so good that only those who are familiar with genuine ivory will see the difference, Eman Soma Suherman, Lampung chief forester told *Suara Karya* daily in Bandar Lampung recently.

The main ingredient for producing the spurious ivory was gypsym mixed with other agents and very carefully processed to make it look like the real thing, Eman said.

The best way to differentiate the bogus from genuine ivory is to look for the grain which makes genuine ivory look slightly cracked, he added.

The imitation ivory was sold at far lower prices than the genuine, the manufacturers told the forestry officials. A two centimeter long piece of genuine ivory could sell at Rp. 75,000 since one kilogram had a market value of Rp. 1.5 million. A piece of imitation ivory measuring 2-3 centimeters was sold at Rp. 25,000.

The imitation ivory processed into various kinds of articles like cigarette holders, were sold at souvenir shops, Branti airport and at other shops to people who were unaware that they were buying fakes, Eman said.

The factory producing false ivory was in a house in remote Labuhan Ratu village, Way Jepara district in Central Lampung. Forestry service officials had long suspected that the house was an outlet for the sale of ivory taken from illegally hunted elephants, Eman said.

He also said he had received a letter from the vice presidential office ordering him to investigate the illegal trading of ivory in Lampung province.

(reprinted from **The Jakarta Post** 29 Nov. 1989).

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5. BURMA (=MYANMAR)

ILLEGAL TRADE THREAT TO TIMBER-CAMP ELEPHANTS

A new threat to South East Asia's endangered elephant populations emerged last week with fears that Burma is exporting more live animals to zoos and traders than its declining herds can sustain. Last week seven young Burmese elephants were imported by a trader into Holland amid claims by British and European conservation and animal welfare groups that they were accepted in breach of Community regulations.

The EC committee that supervises enforcement of wildlife trade restrictions under the Convention on Trade in Endangered Species is now considering a ban on further imports of Burmese elephants.

The renewed concern follows last week's relevations in *The Observer* that elephant populations in South East Asia were being decimated by poachers, using the skin for shoes and ornaments-some of which are imported to Europe.

Wildlife trade investigators say a surge in the number of Burmese elephants on to world markets will deplete stocks of the threatened species even further.

They also fear that some animals which were claimed to have been captive-bred in the timber camps in fact were taken from the wild, despite a ban on the trade in wild elephants.

London Zoo said it would take no more Burmese elephants after keepers were refused access to timber càmps to check whether the animals were captive-bred as claimed.

They were horrified at the poor physical condition of the animals when they arrived in the Netherlands en route for the UK. One animal subsequently died. A zoo spokesman said they had become 'extremely suspicious' of the origins of such a large number of elephants coming into Europe.

The seven elephants that turned up in the Netherlands last week are the latest consignment to arrive in Europe through the hands of a well-known Dutch wildlife trading company. Last year the company brought 22 elephants

into Europe, including three that ended up at Whipsnade Zoo.

A report by the International Union for the Conservation of Nature, says that timber camp elephants seldom reproduce, forcing the companies to capture wild animals to supplement their workforce. The report describes 'rampant' poaching, poor work conditions and 'single sex quarters' that make it practically impossible for elephants to mate.

Burma has traditionally had a good record in conserving its elephants to supply the demand from the logging operations, in a country that still has half of its native forests intact. The Burmese Forestry Department has set an annual capture limit of 200 to keep up the timber camp population of some 5,000 animals, but, according to the report, authorised trappers are only managing to take 120 a year because of the declining numbers.

Peter Knights of the London-based Environmental Investigation Agency asked the European Commission to implement a complete ban after last week's animals were allowed into the Netherlands.

He said: 'We are in an absurd situation where the timber camp populations are unable to sustain themselves except through capturing wild animals, and yet they are offering the equivalent of a quarter of the animals they need to capture to animal traders'.

He was also critical of the Dutch authorities for allowing the animals into Europe with no indication on their transport certificates of who would eventually receive them.

'The Dutch authorities are clearly in breach of the convention which stipulates that the country importing the elephants knows that the animals are going to a suitable keeper-which they appear to have ignored', said Mr. Knights.

According to a spokesman for the Dutch Ministry of Agriculture, its officers have now established that the animals are bound for Dutch zoos.

Peter Beaumont
(reprinted from **The Observer** 5 August 1990).

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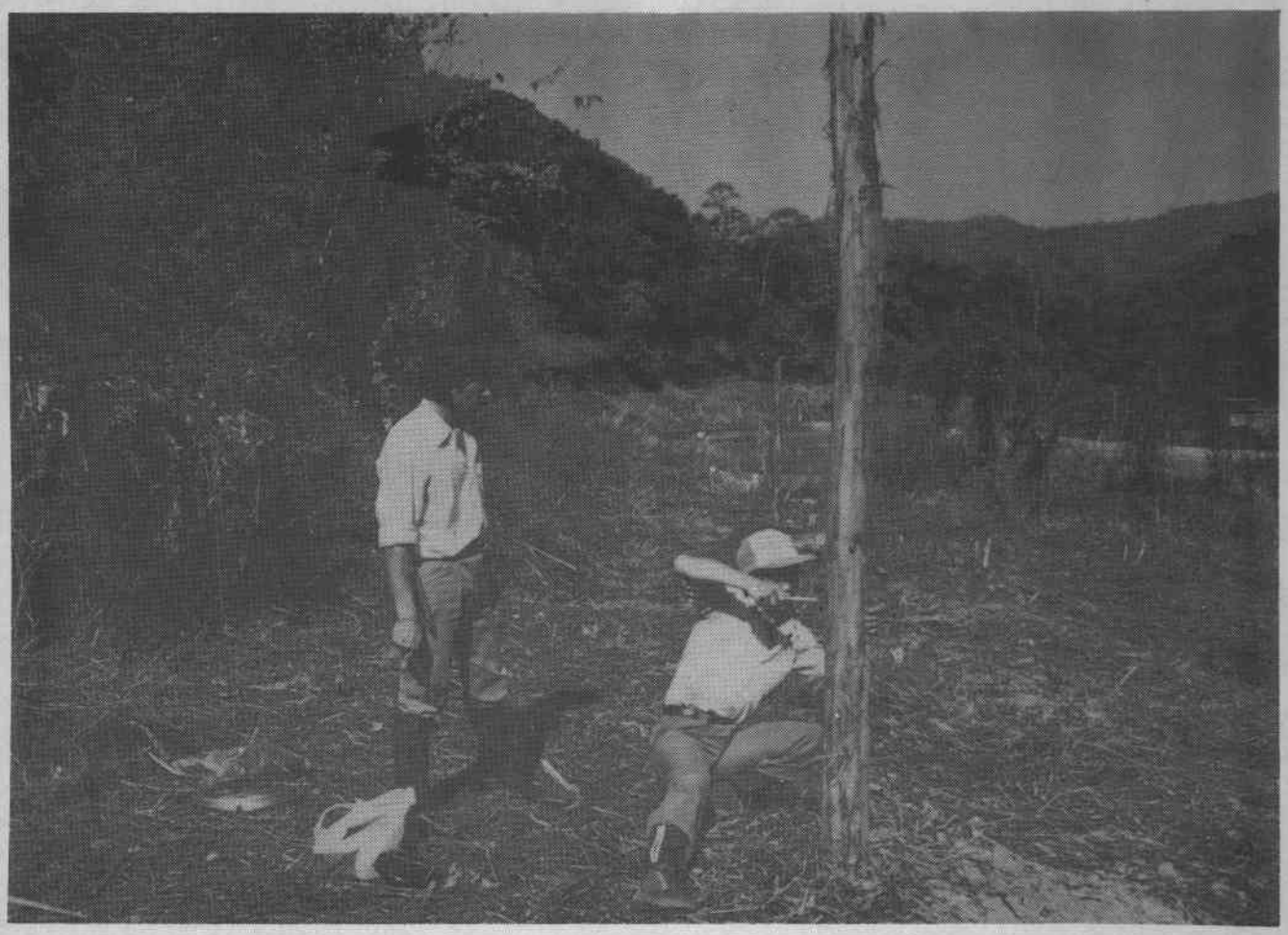
6. CHINA

RESOLVING ELEPHANT-HUMAN CONFLICTS IN XISHUANGBANNA NATURE RESERVE

The Xishuangbanna Nature Reserve system consisting of five sub-reserves namely Mengkao (7,627 ha), Mengyang (99,733 ha), Menglun (11,267 ha), Mengla (92,933 ha) and Shangyang (30,533 ha) is situated in the southern part of Yunnan Province in Southwest China. It is the last refuge of the Asian elephant *(Elephas maximus)* in China where about 250 animals are known to occur in the wild. Throughout much of their present range in China, the elephants are in conflict with man.

Two of the most serious conservation problems are the conversion of forest to rubber plantations in areas below 900 m elevation and the growing demand for fuel wood – the only source of energy for the population of 650,000 people. Only about 23–31% of the original forest cover still remains. The human population within the protected areas estimated to be over 14,000 is spread over the entire reserve system in 93 villages and is increasing steadily at an annual rate of 2.4%. Such a system of dotted human settlements within the protected areas provides many loopholes for the misuse of land and human encroachment. It also enhances the depredation of crops by wildlife in general and the elephants in particular. Human-elephant



Setting up an electric fence in San Cha He study area. Photo credit (Charles Santiapillai)

conflicts have increased over the past decades following forest conversion and human encroachment. Losses from elephant damage to cultivated crops can be as high as US$ 2,000 per year per area.

Damage by elephants to cultivated land is inevitable so long as palatable food plants such as sugar cane, rice, corn etc are grown in the vicinity of elephant reserves, and almost without exception human agricultural communities grossly exaggerate the economic effects they incur through depredation by wildlife. The current policy of paying compensation to the farmers for crop loss from elephant depredations within the protected areas although justified in the short term, should not become an institutionalised practice accepted as routine. It was this consideration that led the Forestry Bureau in Yunnan to explore the possibility of mitigating elephant depredations in Xishuangbanna using electric fences as elephant barriers. Three experimental electric fences were established in Xishuangbanna Nature Reserve at Qin San, San Cha He and Chun Tien Pah villages within the Mengyang sub-reserve.

Charles Santiapillai

7. SRI LANKA

ENHANCING THE SURVIVAL OF ELEPHANTS

Excerpts from an address delivered at the FAO Regional Expert Consultation on Management of Protected Areas in the Asia–Pacific Region. 10–14 December 1990. Bangkok, Thailand.

In Sri Lanka, the elephants are to be found mainly in the low country Dry Zone. In 1969, the elephant population was estimated to be between 1,745 and 2,455 animals. A subsequent estimate in 1987 indicated that the elephant population may have increased to between 3,051 and 3,435 animals. The general feeling is that the true number might be in the range of between 2,500 and 3,000 animals. In any case, the crux of the present problem is that the animals are raiding crops and causing much damage to both man and cultivation.

The solutions to resolve these elephant-human conflicts in Sri Lanka need to be worked out carefully with much thought given to the survival of the elephants on the one hand and the safety of the people and their crops on the other hand. The future management of the Protected Areas in the Dry Zone will have to be improved to accommodate and contain the elephants that are at present marauding crops and attacking human beings. The broad recommendations are: –

1. To increase immediately the food and water resources available in the selected Protected areas. In this respect, the following areas have been identified for development in 1991: – Yala North (Blocks III and IV), Kahalle–Pallekulla Sanctuary, and Maduru Oya, Wasgamuwa and Wilpattu National Parks. These areas have been highlighted as the country's major centres of conflict between man and elephant.

2. To drive the elephants into the areas that have been identified previously.

3. To retain the animals within the target areas by using electrified fences, if necessary.

4. To capture and domesticate any excess animals and also to establish semi-domestic breeding centres. Troublesome elephants with proven crop-raiding records would be the first to be captured and domesticated.

All these would mean a complete change of the approach to Wildlife Conservation Management in Sri Lanka. It would also signify a massive investment in money, material and manpower.

By Sarath Kotagama

BOOK REVIEWS

THE ASIAN ELEPHANT : Ecology and Management. Pp. xvii + 251
Cambridge University Press, Cambridge. 1989.
by. R. Sukumar. Price : 40.00 pounds sterling.

The Asian elephant has had a much longer and more intricate relationship with man than its African cousin. During the past 4000 years Asian elephants have been objects of worship, targets for hunters, beasts of burden, machines of war, and have crossed the Alps with Hannibal to boot. Paradoxically, however, studies of African elephants have forged ahead of those on its Asian cousin, with one major exception. 'Musth', the period of heightened sexual activity and aggression in males, is synchronized and more obvious in Asian elephants and therefore was described a decade carlier than in African elephants. Otherwise, the availability of biological material from culls and cropping schemes, the concern caused by elephant damage to trees, and what has almost amounted to an extra trophic layer of expatriate biologists in East Africa, have all combined to ensure that studies of biology and behaviour of African elephants have remained to the forefront.

The Asian Elephant is therefore a very welcome addition to the comparative literature on elephants, and sets a high standard in the Cambridge Studies in Applied Ecology and Resource Management series. Indeed, this book sets standards of its own for the way it interweaves the study of a single species with human ecology. By the latter I mean not just the impact of, say, hunting or a given management practice, which is normally as far as most applied ecologists take their subject: obviously these topics are discussed in the *Asian Elephant* in two final chapters on population dynamics and on conservation and management. However, these are preceded by individual chapters on crop-raiding by elephants, manslaughter by elephants, habitat manipulation by people and elephant slaughter by people, which provide a more detailed picture of the ecology of the animal-man interaction than is a available for most large mammals, including the African elephant.

The book opens by describing the historical and cultural background to the long-standing relationship between man and elephants, and the distribution and status of elephants throughout Asia. A picture emerges of an intensive interaction between elephants and people which has resulted in an enormous depletion of habitats and elephants, though a total current Asian elephant population of 35-55000 is more than was feared. Because Asian elephants have to contend with fragmented habitats and dense human populations. Sukumar concentrated his fieldwork upon studying elephant movements and habitat utilization in an area of natural forest surrounded by cultivation in southern India. He shows that Asian elephants live in matriarchal groups with traditional home ranges. They are mixed feeders, cause some damage to trees and males, especially, have a propensity to crop-raid, which results in a number of human deaths. Only males possess tusks, so females are not affected by the impact of the ivory trade and poaching, as are African elephants. However, the loss of large trophy males may be very important: with the fragmentation of Asian elephants into small units, models suggest that the effective population size becomes larger as the sex ratio becomes more skewed, and small patches clearly cannot hold large populations. Another significant impact upon wild populations is the capture and removal of elephants for domestication. The overall conclusions of the book are that management of elephants should be directed at minimizing the conflict between man and elephants by the use of electric fences, and that there is no justification for culling Asian elephants.

The book is novel, well written and convincingly argued, so it is almost inappropriate to mention the occasional weaknesses. However, the book would have benefitted greatly from

ending with an overview rather than somewhat abruptly on a series of conservation options. Also, discussion of various theoretical models (e.g. optimal foraging) that are not applied to the data are an unnecessary distraction because the data are interesting enough to stand on their own. However, these are minor points that do not detract from a fine book that I recommend to any applied ecologist or conservationist interested in the management of large mammals. Sukumar really has got to the heart of the matter and studied the vital topic of the human-animal interaction that must be resolved if large mammals are to be conserved in the long-term.

N. LEADER–WILLIAMS

THE ASIAN ELEPHANT : Ecology and Management
by R. Sukumar. Cambridge University Press. 1989.

A a time when international concern is focused heavily on the plight of the African elephant *(Loxodonta africana)* whose numbers have declined over the decades to about 600,000, it is disturbing to know that there are only about 34,000 to 56,000 Asian elephants *(Elephas maximus)* left throughout Asia. Much of the decline in the number of Asian elephant has been due to the loss of habitat through competition with man.

Dr Sukumar's book has synthesised almost a decade's observations and research on the Asian Elephant carried out in Southern India. It is the only serious book of this nature currently available as far as the Asian elephant is concerned. As such it becomes an invaluable source book for the wildlife managers and ecologists involved with the conservation and management of the elephant in Asia. Given its easy style, it can also be read by anyone wishing to learn more about the dynamics of elephant populations.

The book reviews the status of the Asian elephant in the Indian Subcontinent, Continental Southeast Asia and in such islands in Asia as Sri Lanka, Sumatra and Borneo. The book is largely based on the author's field studies carried out in an area of 1,130 km^2 spread over the Chamarajanagar, Kollegal and Satyamangalam Forest Divisions in Southern India. In view of the fact that this study area also included a 70 km^2 enclave of cultivated land, the book addresses such key conservation and management issues as crop raiding by elephants, man-slaughter by elephants, poaching and habitat manipulation by man. The book discusses not only the causes of crop raiding by elephants but more importantly, it provides a number of practical methods to mitigate such attacks.

One of the most interesting chapters in the book is about the dynamics of elephant populations in which Dr Sukumar assesses the influence of habitat conditions on the performance of the elephant populations. That the age at sexual maturity is very plastic in elephants and can be deferred in unfavourable situations has been documented by Dr. Richard Laws in the case of the African elephant. In Asia, it appears that the mean age at first calving may be as late as between 18–20 years. Bull elephants may not be able to mate until they are older than 20 or 25 years owing to prevailing social hierarchy. Mean calving interval of 4.7 years recorded in the field compares favourably with the most productive African elephant populations.

Dr Sukumar's book must be regarded as an invaluable asset to any wildlife manager involved with the management of elephants. It is particularly useful in understanding the more common problems of why elephant raid crops, how elephant populations can be vulnerable to demograpic, environmental and genetic stochasticity once their size becomes too small. The book also underlines the success in breeding elephants in semi-natural conditions. In Tamilnadu alone, between 1950 and 1983, about

74 calves were born to 37 captive adult cow elephants. Such a success was achieved mainly because the animals were kept in larger groups (more than 10 animals) and let out for feeding at night in the forest, where the wild bull elephants could mate with the cows. Here perhaps is a pointer to those Zoo authorities who wish to breed endangered species in captivity. Large mammals are more likely to breed in natural or semi-natural conditions than in confines of the Zoos alone.

The book is illustrated with clear black and white photographs of elephants and their habitats in India. If there is one factor that is disagreable about this book, then it must surely be its prohibitively high cost at 40 pounds sterling! At such a price, most of the wildlife managers and scientists in the Third World would find it extremely expensive and so beyond their reach. This can be overcome by producing a cheaper paperback edition which would be of enormous use to everyone interested in the management and conservation of one of Asia's most conspicuous and endangered species of large mammals.

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Mr Ajay Desai (left) of the Bombay Natural History Society, and member of the Asian Elephant Specialist Group conducting the field exercises with a group of participants at Mudumalai Wildlife Sanctuary during the Workshop on Censusing Elephants in Forests held in January 1991 (Photo credit: Mr Widodo).

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