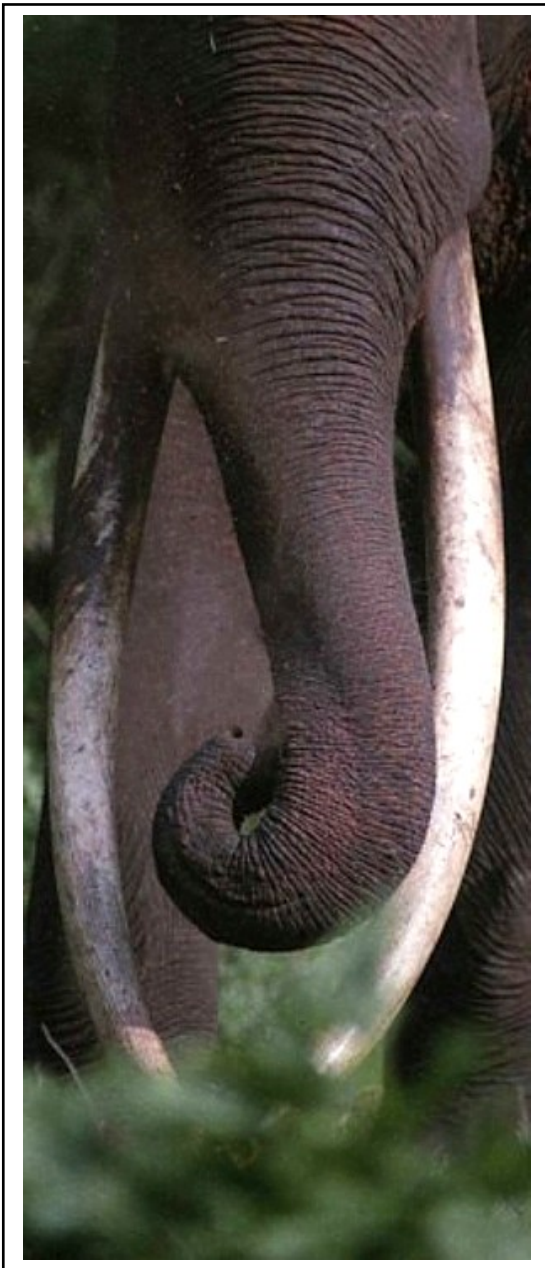


Elephant Range States Meeting

24 – 26 January 2006

Kuala Lumpur, Malaysia

Report



IUCN
The World Conservation Union

 **SSC**
Species Survival Commission

Dr. Holly Dublin
Mr. Ajay A. Desai
Mr. Simon Hedges
Dr. Jean-Christophe Vié
Dr. Channa Bambaradeniya
Mr. Alvin Lopez

Hosted by:

Government of Malaysia



Department of Wildlife and National Parks, Peninsular Malaysia

Sponsored by:



U.S. Fish and Wildlife Service

Facilitation to Technical Support by:



IUCN Species Survival Commission

Organization and Logistical Support by:



CITES MIKE



OPENING CEREMONY



ASIAN ELEPHANT RANGE STATES MEETING

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Acronyms and Abbreviations

AfESG	African Elephant Specialist Group
AsESG	Asian Elephant Specialist Group
BBSNP	Bukit Barisan Selatan National Park (in Indonesia)
CITES	Convention on International Trade in Endangered Species
ECC	Elephant Conservation Centers (in Indonesia; also called Elephant Training Centers)
EIA	Environmental Impact Assessment
ETIS	Elephant Trade Information System
ESU	Evolutionary Significant Unit
GIS	Geographical Information System
HEC	Human-elephant conflict
LEM	Law Enforcement Monitoring
IUCN	The World Conservation Union
MER(s)	Managed Elephant Range(s) or Reserve(s)
MIKE	Monitoring Illegal Killing of Elephants
NGO(s)	Non Government Organization(s)
NTFP	Non Timber Forest Produce
PA(s)	Protected Area(s)
SFA	State Forestry Administration (China)
SSC	Species Survival Commission of IUCN
TRAFFIC	Trade Record Analysis of Flora and Fauna in Commerce
USFWS	U.S. Fish & Wildlife Service
WKNP	Way Kambas National Park (in Indonesia)

ACKNOWLEDGEMENTS

We would like to thank the Government of Malaysia for hosting this important meeting through their Department of Wildlife and National Parks, Peninsular Malaysia. We also thank all the officers of the Department of Wildlife and National Parks, Peninsular Malaysia, who provided logistic support and were excellent hosts.

We would particularly like to thank the delegates from all 13 range States for actively participating in the meeting and making it a success.

We wish to thank the US Fish and Wildlife Service for funding this meeting and making it possible for all 13 range States to meet and work towards the conservation of the Asian Elephant. We particularly like to acknowledge the interest that Dr. Meenakshi Nagendran took in supporting and actively participating in this meeting.

We are very grateful to the CITES MIKE team led by their Director, Mr. Nigel Hunter for working tirelessly to get this meeting organized and for supporting us throughout the meeting.

We also take this opportunity to thank all the others who participated and helped in making this meeting a useful and successful one.

EXECUTIVE SUMMARY

This is the first meeting where all 13 Asian Elephant range States formally met with the objective of initiating a dialogue to discuss issues, share experiences, and develop a consensus for long-term conservation initiatives for the Asian elephant. The three-day meeting focused on identifying threats and issues, sharing ideas and experiences, and on brainstorming to see where we are and where we need to go from here.

The range States identified habitat loss and fragmentation, and the resultant human-elephant conflict as the biggest threats to elephant conservation. Illegal killing and trade in elephant products were also identified as major threats.

It was acknowledged that data on status and distribution needed to be updated urgently through well-designed field surveys using standardized methods that allow monitoring of populations; the importance of establishing a standardized database on population and distribution for the purpose of compilation and analysis was also noted.

Habitat conservation was critically important and would require cross-sectoral land use planning that was supported by a clear national policy. The use of elephant specific EIA would help to stop or minimize the adverse impact of development on elephant habitat. It was noted that with limited scope for significantly expanding PAs, ‘Managed Elephant Ranges’ (MERs) that allow human use of elephant habitat in a compatible and sustainable manner, would be the way forward. There is a need for a database on habitat status so that trends can be monitored.

The root cause of human-elephant (HEC) conflict, habitat loss and fragmentation, have not been addressed effectively. An *ad hoc* approach, poor design and application of mitigation strategies and the absence of sustained application are the major reasons for the failure of HEC mitigation measures. An adaptive strategy, use of innovative mitigation methods, cross-sectoral land use planning and the involvement of local communities are needed to resolve HEC effectively. There is a need to standardize data collection methods and develop guidelines for HEC mitigation. The problem of small isolated populations, with no long-term conservation potential and living in serious conflict with people, needs to be discussed and resolved.

The CITES MIKE programme has delivered basic equipment and training at all designated MIKE sites. In Southeast Asia, existing data for two of the 13 sites are considered as being current and surveys are being planned at all other sites. In South Asia surveys have been completed in 11 of the 15 sites. Lack of communication, resulting in poor data flow from sites to the National Officers and to the Sub-regional Officers was the main impediment as was inadequate funding.

Asia remains a major market for African ivory. In Asia, poaching and illegal trade in ivory continue in most range States; the scale of the problem is reasonably well known

and it varies across the range. Progress has been made in some countries in implementing CITES decisions, however they are not being implemented fully across all range States. With the exception of a few countries, reporting seizures to ETIS has been poor. Moreover, cross-sectoral linkages between wildlife authorities and other law enforcement agencies are generally poor and need to be strengthened to curb illegal trade in ivory. Registration of captive elephants and their ivory, monitoring of ivory stockpiles and strict regulation of domestic ivory trade were considered very important for stopping the illegal trade in ivory. Retaliatory killing of elephants due to HEC is becoming a serious problem in some range States.

Within the range States, captive elephants are being used for eco-tourism, exhibition/public awareness, labour, patrolling and HEC mitigation work, and in religious and cultural functions. It is predicted that future demand for captive elephants will vary among range States with some showing an increase while others showing a decline. Therefore management strategies are needed to meet future needs and also to implement good management and husbandry practices. Registration of captive elephants using microchips and unique external marking is considered vital for management of captive populations and for stopping illegal trade in captive elephants.

Final discussion

The final discussion session centered on the following issues: “What do we want to do next? What is our bigger vision?” The feedback from the range States was grouped into 1) global, regional, and sub-regional suggestions; 2) bi-lateral cooperation; 3) national level issues; 4) identification of mechanistic needs; 5) the need for IUCN/SSC support; 6) the need for focal points (representatives) in each range State and 7) funding.

At the global, regional and sub-regional levels, the need for further meetings to strengthen communication, cooperation, and information sharing initiated by this meeting was considered important. This would help address trans-boundary issues and also facilitate the formulation of regional and sub-regional strategic plans which were considered important. The importance of involving conservation biologists in the planning process was noted.

At the bilateral level, individual countries indicated that they would initiate processes to resolve conservation issues relating to trans-boundary populations and illegal trade in elephant products.

At the national level, the development (or revision) of a national policy and action plan for elephant conservation was considered an important next step and this would involve the use of cross-sectoral land use planning. The need to establish and manage PAs with viable populations and habitats was noted. The need for baseline data on populations and habitat, for cross-sectoral information sharing, and for specific information on population and habitat viability and on genetics were noted.

The need for a common database for Asian Elephants similar to the African Elephants Database, information sharing at all levels (from local to international), registration of captive elephants, and guidance and assistance in planning and implementing of national action plans were identified as specific mechanistic needs.

The need for more funds to support conservation actions was recognized, and it was suggested that more sources be sought for such funds.

The IUCN/SSC was specifically requested (through its country offices) to bring all stakeholders towards conservation of targeted species and to facilitate the development of regional action plans for ASEAN up to 2020.

The co-chairs of the AsESG suggested that the group could assist with the actions suggested above specifically in the following ways: It could assist with

- the development of an Asian Elephant Database, which would include the distribution and status of population (including captives), habitat status and HEC
- strategic planning by organizing and facilitating meetings; coordinating action planning using the new multi-stage IUCN process and ensuring that it links to the strategic planning process and involves managers and policy people
- the development of standard data collection protocols for population surveys and HEC
- standardizing HEC mitigation protocols and approaches;
- capacity building through assisting with study tours and information sharing, covering Managed Elephant Ranges, HEC mitigation, law enforcement etc.;
- Population viability analysis (PVA) for captive populations and capacity building for captive elephant registration schemes.

Actions proposed by range States

The last session focused on proposed plans at the various levels for elephant conservation. These are summarized below:

National action plans: Nepal, Myanmar, Indonesia, Lao PDR, China, Sri Lanka and Thailand indicated that they would formulate national action plans and implement them. Thailand planned to set up a national committee for the management of captive and wild elephant populations.

Bi-lateral actions: Malaysia, Myanmar, Bhutan, China, India, Vietnam, Cambodia, Bangladesh and Thailand suggested that they would initiate bilateral interactions to support sub-regional level actions (for wild and captive elephants), facilitate information sharing, and address trans-boundary populations. Several range States offered to help others, India offered to help with developing of national action plans, Indonesia with registration of captive elephants using microchips and Nepal with captive breeding.

Malaysia, Bhutan, Lao PDR, Vietnam and Cambodia suggested that they would initiate surveys to gather data on their elephant populations. China indicated that it would strengthen law enforcement to stop illegal trade in ivory and elephant parts. Indonesia planned to develop an action plan for its captive elephants and Bangladesh said that it would initiate the process for the registration of captive elephants. China indicated that it was willing to take captive elephants on loans to meet its needs for captive elephants.

Recommendations

- Regional and sub-regional level: Formulation of national, sub-regional, and regional strategic plans for elephant conservation. Involvement of conservation biologists to help develop sound management strategies. Regular meeting of Asian elephant Range States. Rational and sustainable utilization of captive elephants.
- Bilateral level: Establish bi-lateral mechanisms to address trans-boundary elephant conservation issues (addressing conservation, HEC, poaching, trade, etc.).
- National level: Develop national policies and strategies for elephant conservation and captive elephant management. Initiate surveys to gather baseline data for conservation planning and monitoring. Improve information sharing with relevant departments within government.
- Specific mechanisms and tools needed: A common standardized database for Asian elephants similar to the African Elephant Database. Information sharing at the cross-sectoral, national, and international levels. Registration of all captive elephants. Need for guidance and technical assistance for implementation of national action plans.
- Request to IUCN/SSC/AsESG to facilitate the development of sub-regional and national strategies and action plans and assist in identifying potential funding for this effort. IUCN country and regional offices to play an important role in bringing all stakeholders together to support this process

1 OPENING CEREMONY

The meeting commenced with an inaugural session where Dr. Holly Dublin, the Chair of the IUCN Species Survival Commission, delivered the key note address. Dr. Dublin highlighted the importance of having all 13 range States of the Asian Elephant gathering to discuss conservation issues relating to elephants. Dr. Dublin suggested that this meeting could be the first step towards a strategic planning exercise that could be done at global, regional, sub-regional, and national levels. She pointed to success stories from Africa where similar efforts had yielded good results and resulted in the range States working together at regional and global levels to further elephant conservation. Dr. Dublin's address was followed by addresses by Dr. Hj. Musa bin Nordin, Director General of the Malaysian Department of Wildlife and National Parks, and by YB. Dato' Sri. Hj. Adenan B. Hj. Satem, Parliamentary Secretary, Malaysian Ministry of Natural Resources and Environment. The Director General of Perhilitan highlighted the fact that Asian elephants have played a significant role in Asia, both culturally and economically, thus making their conservation important to the range States. He pointed out that elephant habitat had been sacrificed in the name of development, which in turn had resulted in serious human-elephant conflict because of which people suffer and illegally kill elephants in retaliation. He then stressed the importance of using elephants, as an umbrella species, for biodiversity conservation and also pointed to the role that they could play in eco-tourism. He suggested that elephant conservation can be used as a benchmark for evaluating our success in biodiversity conservation. He particularly stressed the need for dialogue and collaboration between range States in understanding and dealing with threats that are becoming increasingly severe across the range of the Asian elephant. He suggested that the principles of Convention on Biological Diversity such as sharing of information and transfer of technology be observed. Pointing to the fact that this meeting brought together various interest groups, government representatives from all 13 range States, international organizations and researchers, he expressed his happiness at this first important step and hoped that the meeting would be productive.

The Parliamentary Secretary of the Ministry of Natural Resources and Environment congratulated the Malaysian Department of Wildlife and National Parks for successfully organizing the meeting, CITES MIKE for logistical support, IUCN for technical support, and the US Fish & Wildlife Service for funding the meeting. Expressing his happiness that all 13 range States were participating, he emphasized the need for open and frank discussion to address the threats faced by the Asian elephants in a practical and effective way. He also stressed the need for research to better our understanding of elephant conservation requirements and the importance of keeping policy makers informed about the decisions taken at this meeting (and other such meetings), so that policy makers can take action on the suggestions made. He then declared the meeting open.

2 OBJECTIVES OF THE MEETING

Subsequent to the inaugural session, Dr. Dublin gave a general introduction to the meeting, stressing that the objective of this meeting was to initiate a dialogue among range States to discuss issues, share experiences, and develop consensus for long-term conservation initiatives. While acknowledging that funds were sometimes available on a short-term basis, she suggested that the vision should be long-term. She said that the three-day meeting should focus on identifying threats and issues, on sharing ideas and experiences, and on brainstorming to see where we are and where we need to go from here. Dr. Meenakshi Nagendran from the US Fish & Wildlife Service's Asian Elephant Conservation Fund highlighted the importance of the participation of all 13 range States at this meeting as a great achievement. She stated that this was a good opportunity for the 13 range States to discuss matters related to conservation of the Asian Elephant. She pointed out that it was ultimately up to the range States to take action. She also indicated that the USFWS would be able to help fund some ideas that issue forth from the meeting through their grants program.

3 INTRODUCTION AND AGENDA

The range States had expressed their concerns for the future of the Asian Elephant and had individually forwarded a list of agenda items for discussion at the meeting, but these were unstructured. As facilitators, the IUCN/SSC team was entrusted with the task of recommending a structured agenda based on the range States' initial list and with the objective of guiding the meeting to review current status, consider threats and challenges and suggest the way forward. The items suggested fell into the following major categories, concerns about habitat loss and the resultant human-elephant conflict, illegal killing of elephants and ivory trade, management of captive elephants, cross border populations and related conservation issues, the need for action plans, constraints to conservation and lastly, the need for information sharing and technical assistance. The agenda was therefore structured to deal with population monitoring, habitat concerns, HEC, illegal killing of elephants and trade, and captive elephants. Within these, cross border issues and constraints to conservation would be automatically covered. The Chair, Dr. Holly Dublin brought in the African experience through presentations on relevant issues where Africa had made significant progress and where the inputs would help guide us to better conservation approaches in Asia. Inputs by the respective teams of CITES MIKE and ETIS programmes in Asia updated the delegates on the current status of these programmes and noted the progress made by the range States in implementing these important programmes. The agenda for the meeting is given in [Annex 1](#) and the list of participants in [Annex 2](#).

The IUCN/SSC team felt that the best approach would be to initiate the meeting with a technical session that set the context for the delegates with an overview of the status of the Asian elephant along with some technical/background information. These technical sessions were to be followed by presentations from the range States, focusing on the same

aspect covered by the technical sessions, but highlighting and capturing country - specific issues. These presentations were structured to expose the delegates to a diversity of situations encouraging experience sharing, discussions and interactions. In addition to these presentations, and with the specific objective of getting the delegates to focus on problem analysis and more concrete actions and plans, Dr. Dublin initiated several interactive sessions. These interactive sessions focused on threat identification, management of HEC, management of the captive population, and lastly on what the next steps would be in the broader context of elephant conservation.

The technical and range State presentations are given in the sections that follow; the interactive sessions are highlighted separately within the relevant sections as they move towards problem analyses, and identification of solutions and concrete actions. The key issues highlighted and the recommendations made after individual presentations or after a session were summarized at the end of the presentation or section. The question and answer sessions and the general discussion that followed could not be captured completely, but important points have been recorded and are briefly summarized at the end of the presentations.

A small steering committee was formed consisting of the IUCN/SSC team, two nominated delegates, one from South Asia (Dr. R.B. Lal) and another from Southeast Asia (Dr. Mattana Srikrachang) and a representative from the host nation (Ms. HJH Siti Hawa Yatim). This committee reviewed and agreed upon a brief daily report that summarized and recorded the discussions and actions of the day. The rapporteurship was done by Dr. Channa Bambaradeniya and Mr. Alvin Lopez and the daily report was consolidated by Dr. Jean-Christophe Vié. This daily report ensured that connectivity was not lost and that there was consensus among the delegates that the details of the meeting were accurately captured.

4 SETTING THE CONTEXT – MANAGING WILD ELEPHANT POPULATIONS

During the first session, Mr. Simon Hedges and Mr. Ajay Desai, the two Co-Chairs of the SSC Asian Elephant Specialist Group (AsESG) made four technical presentations which provided background information and updated the participants on matters related to conservation of the Asian Elephant. Dr. Holly Dublin, Chair, IUCN/SSC made two presentations based on African experiences.

4.1 ASIAN ELEPHANTS: STATUS AND THREATS

Mr. Hedges started with a presentation to set the context of the meeting by listing the major threats and issues as follows:

4.1.1 Lack of good data on status and distribution

The current Asian elephant population is “estimated” to be between 30,000 and 50,000 elephants, spread across the 13 range States; however this figure has been quoted for decades. While there have been revisions (increases or declines) for individual countries during this period, these figures are in reality little more than guesses for most populations (Duckworth and Hedges 1998; Blake and Hedges 2004; Hedges *et al.* 2005). Good and reliable data on population sizes and distribution is generally lacking for most countries. In the case of Myanmar and Bhutan only coarse information on distribution is available. In other countries like Bangladesh, Cambodia, Lao PDR, Malaysia, Nepal, Sri Lanka and Vietnam we have data on distribution and crude relative abundance. In the case of India, Indonesia and Thailand we have data on distribution, crude relative abundance and reasonable-to-good estimates for some populations within these countries. However, such data are restricted to a few sites, usually Protected Areas (PAs), and similar data are not available for the entire country. In addition, much of the data on distribution and status are fairly old and may not accurately reflect the current status of the species within some countries. This absence of current data on status and distribution seriously impairs the ability to prioritize populations and develop suitable conservation and management strategies. Additionally, the absence of reliable baseline data also makes it impossible for managers to monitor population trends that would allow them to evaluate the impact of both threats and management action.

Given this situation there is an urgent need to update and upgrade the existing data for many areas. There is a need to move away from guesswork or data that are gathered using non-standard methods that are not reliable or repeatable and whose precision cannot be measured. A move in this direction would require that the range States eventually adopt standard reliable methods that allow both population estimation and monitoring in a scientifically acceptable way. Such methods (existing or newly developed) will need to be agreed upon by the range States with the objective of establishing a database that

provides a transparent and openly available summary of the status of the Asian elephant population size and distribution for all range States. Data would be coded by reliability and linked to a GIS database that is periodically updated to take in any new information that is available. Such a database would allow reliable assessment and monitoring of the status of the Asian elephant at the global, regional, and sub-regional level. It would also facilitate the development of conservation strategies that are based on reliable information.

Among the constraints that have not allowed for a systematic and technically sound assessment of the status and distribution of the Asian elephant in the past have been the absence of stakeholder “buy in”, lack of technical capacity, and inadequate resources (funds). Given the importance of reliable data on status and distribution for developing conservation strategies and for monitoring, the development of a database should help achieve stakeholder “buy in”. There is a need to focus on training and capacity building within range States that do not have the technical capacity so that reliable assessments of elephant distribution and population size can be made. Funding remains a major constraint given the large size of the elephant range and the limited resources that are available within many range States. There will be a need to match research objectives with resource availability, i.e. a need to choose practical solutions that address the population assessment needs. A cohesive and coherent strategy by the range States to work towards updating the information on the current status of the Asian elephant would significantly help in leveraging the funds from their own governments and also from international donors.

A step in this direction has been taken by the range States when they agreed to implement the CITES MIKE Program. The purpose of MIKE is to provide the information needed for the elephant range States to make appropriate management and enforcement decisions, and to build institutional capacity within the range States for the long-term management of their elephant populations.

4.1.2 Habitat loss and degradation

Habitat loss and fragmentation remain the greatest threats to Asian elephants throughout their range (Santiapillai and Jackson 1990; Sukumar 1992; Leimgruber *et al.* 2003; Hedges *et al.* 2005; Hedges in press). Right across its range the Asian elephant’s habitat has been shrinking and becoming increasingly fragmented. Agricultural expansion, logging, development, etc., which are driven by the demands of Asia’s large and growing human population, are the main causes of habitat loss and fragmentation. Leimgruber *et al.* (2003) mapped ‘wildlands’, defined as large, un-fragmented, and undeveloped areas, and found that these areas accounted for only 51% of Asian elephant’s range in the 1990s. Furthermore, only about 16% of un-fragmented wildlands and only 8% of the species’ entire range were protected. While these calculations were of necessity based on scarce and often low quality data on elephant distribution (as discussed above) they are likely indicative of the actual situation. Leimgruber *et al.* (2003) argue that maintaining large un-fragmented wildlands will be an essential tool for the long-term conservation of

elephants in Asia. While this is undoubtedly true if we are to maintain ecologically functioning populations of elephants that retain at least some of their evolutionary potential it is not the whole story: many of India's, Sri Lanka's, and Indonesia's elephant populations live in highly fragmented areas in close proximity to sizeable human populations. Nevertheless, the price paid in these situations is a high level of human–elephant conflict, which can lead to the extirpation of elephant populations (Sukumar 1992; Leimgruber *et al.* 2003; Hedges *et al.* 2005). Even if effective methods for reducing human–elephant conflict can be developed in those areas where elephants and people are forced to live side-by-side, direct interventionist management of elephant populations and their habitat will eventually be needed and current levels of knowledge about Asian elephant habitat requirements, dietary ecology, and population viability are inadequate for the task (Leimgruber *et al.* 2003).

4.1.3 Small isolated populations

Habitat loss and fragmentation have broken many of the larger habitat patches into smaller patches that now support small isolated elephant populations. Such populations are often confined to small areas unsuitable for elephants and as such these elephants come into increasing conflict with the surrounding human population. Small populations are also more vulnerable to extinction threats as they are exposed to environmental and genetic stochasticity, and to catastrophes (Giplin and Soule 1986). In theory, effective population sizes of N_e 50 and 500 have been suggested as being suitable for short-term and long-term conservation respectively. However, this effective population size would translate into two to three times this number for the actual elephant population size needed, depending upon the age-sex structure of the population. In reality, there are only a few populations in Asia that have an effective population size of N_e 500 or greater (Sukumar, 2003). While meta-population management could address some of the problems of small population sizes, the problem of reduced or inadequate habitat and the resulting HEC would make management of small and isolated populations very difficult. Therefore, the primary focus of management should be on maintaining the integrity of the existing elephant habitat.

4.1.4 Human–elephant conflict (HEC)

HEC is one of the most serious problems for elephant conservation. It results in the death of both humans and elephants. In India, on an average, 250 people are killed each year by elephants. Retaliatory killing of elephants is also becoming a serious problem and this has led to the extirpation of some elephant populations. In the long-term, unless HEC is resolved, conservation of elephants will be difficult. Solutions include using novel methods (e.g. chilli-dung or chilli-grease based elephant deterrents) and in the coordinated use of traditional methods. The effectiveness of various HEC mitigation strategies being implemented also needs to be evaluated. In addition, there is a need to build capacity through the use of HEC mitigation demonstration sites at the local level and through experience sharing between range States.

4.1.5 Illegal killing of elephants

Data provided by India, indicate that 59% of the elephant deaths were due to poaching and another 21% directly related to HEC (poisoning and electrocution); deaths due to natural causes were less than 15% overall. Thus, poaching and HEC results in the bulk of the deaths recorded. Where poaching has focused primarily on ivory it has resulted in severely female-biased sex ratios in some populations. For example (information from Project Elephant, India), the adult male to female sex ratio in Periyar National Park (Kerala state, India), which was very severely affected by poaching, was, 1:122 in 1997. The adult male : female ratios vary across the country from 1:29 for Mudumalai Wildlife Sanctuary in Tamil Nadu state (in 1999) to 1:1.3 in Northern West Bengal (in 2000). When poaching is not confined to ivory alone, the whole population is affected, as all age and sex classes are exposed to it.

4.1.6 Trade in live elephants and elephant parts

There is a demand for ivory and other elephant parts (hair, skin, teeth, meat, etc.) in Asia and this is a serious problem for elephant conservation. The trade (domestic and international) in ivory and other elephant parts is difficult to monitor. There is a need for improved legislation, increased enforcement, and monitoring to curb trade and the resultant poaching of elephants that feeds it. There have also been a few reports of illegal captures and trade in live animals within range States, and occasional reports of smuggling of live elephants between range States. This too poses a threat to elephant conservation, especially in countries where elephant populations are low.

4.1.7 Very large numbers of captive elephants

With an estimated 16,000 captive elephants across Asia, serious attention needs to be given to their management as they represent nearly 25% of the Asian elephant population. These captive elephants are not a threat in themselves but new captures (illegal) from the wild, to support the demand for more captive elephants, could pose a threat to wild populations. Major issues to be resolved here are whether captive elephants should be considered a safety net against extinction? And how should they be managed?

Another important issue that was raised by the Director of the MIKE Program during the discussion was the problem of ivory originating from these captive elephants. It was pointed out that in countries where ivory from captive elephants is legally traded, it creates a loophole for trade in illegal ivory. Therefore, it is clear that there is a need for a system to monitor the trade in ivory from captive elephants.

4.1.8 Constraints

While there are several locally relevant constraints the more general constraints that most range States face in common are:

- Lack of baseline data
- Lack of technical and management capability
 - Loss of mahout culture and knowledge
- Limited funds and other resources
- Corruption

INTERACTIVE SESSION 1: THREAT ASSESSMENT BY RANGE STATES

The Chair requested each range State to identify one or more threats that they considered to be the most serious for their wild elephant populations.

Habitat loss and fragmentation was identified as the single biggest threat to Asian elephant conservation in the long-term. This was followed by HEC. The growth of human populations was identified as one of the problems as this drives habitat loss and leads to HEC. Small and isolated populations were also listed as a problem, and based on the concerns of ETIS and TRAFFIC, trade in elephant products was also listed as a threat.

4.2 DETERMINING, MONITORING AND SECURING INFORMATION ON STATUS

A brief overview of survey methods was made by Mr. Simon Hedges; the methods were listed as follows:

- Non-standard methods
- Aerial sighting-based surveys (not suitable for Asian conditions)
- Terrestrial sighting-based surveys, along line transects (suitable in some areas only)
- Dung count based surveys (suitable for most areas)
- Capture-recapture methods (now being tested, in theory they are suitable)
 - Direct sightings
 - Camera traps
 - Fecal DNA

While recognizing the need to have a practical approach to gathering data on populations so that management needs are met within the constraints of resources and capacity available, the need to use standardized methods was stressed. The use of non-standard methods like total counts, waterhole counts, block counts, footprint counts, etc. do not address the critical issues of detection probabilities and spatial sampling and as such are

not suitable for monitoring populations. The biggest drawback in using non-standard methods is that they are generally not repeatable and precision is often not calculated (and even where it is calculated the assumptions on which these models are based are either not true or are violated). For example, in waterhole counts it is assumed that all elephants come for water only once in 24 hours. This could be false as elephants may visit waterholes at higher or lower frequencies. . Similarly, in the total count method, it is assumed that all elephants in a survey area are detected and counted but this may not be true, as some elephants may escape detection and some may be counted more than once as both elephants and observers are moving through the day.

The use of aerial counts is not practical for Asian elephants as they generally live in forests and visibility from the air is poor in such conditions. Terrestrial sighting based surveys (line transects) are suitable in habitats that are more open and have good visibility, and where elephant densities are high enough to permit reasonable sample sizes (to estimate numbers with an acceptable degree of precision). Dung count based surveys are the most suitable for Asian conditions as this method helps to overcome the problems of low elephant densities and poor visibility. Since an average elephant defecates about 18 times per day, dung densities are always much higher than actual elephant densities, and hence the problem of small sample sizes due to low elephant densities is reduced.

New techniques using fecal DNA to identify individuals, and capture-recapture statistics to estimate population size are still being tested but appear to have good potential for use in certain situations, particularly areas of low elephant density.

4.2.1 Case study: Province-wide elephant surveys in Indonesia's Lampung Province

A case study from Indonesia presented by Mr. Simon Hedges is summarized below (also see Hedges *et al.* 2005).

Analysis of mtDNA shows that the Sumatran elephant (*Elephas maximus sumatranus*) is monophyletic and an ESU (Fleischer *et al.* 2001) making its conservation a high priority. There has been no systematic evaluation of elephant status in Sumatra since the island-wide survey in the 1980s (Blouch and Haryanto 1984; Blouch and Simbolon 1985). In that survey, 44 discrete elephant populations were identified and it was 'guesstimated' that there were a total of 2800 – 4800 elephants in Sumatra. Of these 44 populations, 12 were in Lampung Province with an estimated population of 550 – 900 elephants and Lampung Province was thought to contain two of Sumatra's four most important elephant populations (Santiapillai and Jackson, 1990).

Lampung Province has witnessed human population growth from 3,76,000 in the 1930's to 6.2 million in 2000; this is the highest human population density in Sumatra. Forest cover has declined from 44% in 1960 to 10.8% in 1997. The elephant range, which once stretched in an almost continuous band from west to east, and supported a large population, is now fragmented. The last 20 years have been characterized by loss of

habitat and widespread HEC. The government's response to HEC has been to capture elephants and to hold them in Elephant Training Centers. Despite these changes, there had been no effort to assess the status of elephants in Lampung Province since the 1980's. In 2000, the Wildlife Conservation Society and the Indonesian Ministry of Forestry's Directorate General of Forest Protection and Nature Conservation began a Province-wide survey of elephants with the following objectives:

- To locate all remaining elephant populations
- To assess population size
- To assess the status of elephant habitat
- To identify threats

4.2.1.1 The work involved:

- Dung count surveys in the two national parks to estimate population size
 - Bukit Barisan Selatan National Park (BBSNP) from May – November 2001
 - Way Kambas National Park (WKNP) from Sept 2001 – March 2002
- Reconnaissance surveys in all other areas that had elephants in the 1980's (Feb – June 2002)
- Analyses of satellite images
- Collation of data on captures, poaching, HEC, and land use

The surveys found that only 3 of 12 elephant populations known to occur in Lampung in the early 1980s were extant in 2002. Moreover, the data indicate that one of the remaining three populations may be too small to be viable over the long-term. The survey results for the Province's two national parks, Bukit Barisan Selatan and Way Kambas, produced population estimates of 498 (95% CI=[373, 666]) and 180 (95% CI=[144, 225]) elephants, respectively. Both parks thus contain larger populations than previously reported.

All three currently surviving populations are threatened by habitat loss, poaching, and HEC. Given the current level of pressure on these parks it is estimated that 70% of BBSNP will be under agriculture by 2010 and all the low elevation forests on gentle slopes will be gone (Kinnaird *et al.* 2003). Logging, forest fires, and encroachments also threaten WKNP. All these activities only help to exacerbate HEC.

Between 1 January 2000 and 1 November 2001, 22 elephant deaths were recorded in BBSNP and an additional 14 deaths, possibly due to poaching, were also reported. In the same period, nine elephant deaths were recorded in WKNP. The indications are that poaching is increasing in these areas.

Conservation action in Lampung needs, therefore, to focus on habitat protection, stopping of poaching, and reduction of HEC. There is a need for capacity building and education to help deal with these problems. Given the pressures that these populations face and the

rapid changes that are taking place there is a need for systematic monitoring of these populations.

4.2.2 Questions and discussions regarding status and distribution

- China raised the issue of surveying cross border populations and pointed to the fact that elephants are migratory and this could cause problems in sampling. Malaysia had a similar question and pointed out that the migratory habits of elephants would cause problems if sampling was done during the period when elephants were moving even within country.

Mr. Hedges: The sampling should be done when elephants are not likely to be moving. The cross border populations pose an additional problem in terms of coordinating survey work with the neighboring country. This would have to be addressed through bilateral agreements/understanding between the range States. Meetings, such as the present one, provide the ideal opportunity for range States to discuss and collaborate on such issues. The Director of the MIKE Program pointed to the importance of surveying cross border populations as the institutional mechanisms needed for management of these populations exist but lack of data hinders proper management.

- The Secretary-General of CITES raised an important issue: Is there really a need for such refined survey techniques as it doesn't really matter if there are 10, 20, or 100 elephants? What we need are practical solutions for countries to conserve their animals and plants. Population estimation can be done by scientists or researchers.

Mr. Hedges: The focus is not on population size alone but rather it is the population trend that is important. Using robust techniques to generate reliable data is the only means to monitor population trends as a series of guesses cannot be used to establish trends.

- Bangladesh pointed to a study done there by IUCN using the dung count method that produced figures that appeared to be an under-estimate while the group count method gave better results. They wanted to know which would be a better method.

Mr. Hedges: In general dung counts are likely to be more reliable (if done properly) as the method is based on assumptions that are met.

- The Director of the MIKE Program made a comment that so called non-standard survey methods, e.g. block counts, can be used at times and are quite accurate if done properly.

Mr. Hedges: This maybe acceptable in some cases and in some circumstances but it is important to realize that demonstrating that it would work might take more effort than using a more reliable survey technique.

- Malaysia was interested in knowing what would be the minimum sample size for the dung count method and if this method could be applied to Malaysia where humidity is high and topography is steep.

Mr. Hedges: If there is a lot of dung then the sampling effort needed will not be prohibitively large as one will get adequate sample sizes relatively easily. This method has been used in Malaysia in the past.

4.2.3 Key issues highlighted

- The need to use standardized methods for surveys and population estimation, as this will allow monitoring of populations.
- Dangers of designing conservation strategies based on guesses of population sizes (efficient allocation of resources for conservation of Asian elephants requires much better data than currently exists for most areas).

4.2.4 Recommendations

- **The need for the range States to adopt and use standardized methods for assessing and monitoring population status**
- **The need to establish a standardized database on the status and distribution of the Asian Elephant for the purpose of compilation and analysis**
- **The need to update information on status and distribution through well-designed field surveys**

4.3 THE AFRICAN ELEPHANT DATABASE

Dr. Holly Dublin, Chair IUCN/SSC made a presentation on the African Elephant Database to illustrate how such databases can be organized and used.

The African elephant database has the following features:

- A spatial database containing data on elephant distribution and abundance throughout the species' range
- The most comprehensive single species database in existence
- The most accurate and objective picture of the status of elephants in Africa
- Assists in conservation planning at the national, regional, and continental levels
- Produces the African Elephant Status Reports (AESR) every 3-4 years. The next AESR is due in 2006

The primary function of the database is to:

- Compile, store, and objectively summarize available information on elephant range, numbers, and movements
- Provide information required for setting priorities for conservation and management planning

In the context of the African Elephant Specialist Group the database functions through the following processes:

- Compiling and synthesizing information on the status of the African elephant

- Disseminating information and capacity building
- Providing technical advice and assistance

Data are classified based on the following criteria

- Estimate reliability (survey type)
- Survey quality (intensity)
- Range certainty
- Age of data
- Positional accuracy

Such an assessment of data quality allows the database to use all types of data (total counts, sample counts, dung counts, and ‘guesstimates’) and to categorize them accordingly into four different categories, namely definite, probable, possible, and speculative. The compiled data at the national, regional or continental levels reveal how much each of these categories contributes to the estimated total population at each level.

Among the new features being added to the database are

- Statistical analysis of changes in populations with comparable estimates
- Tracking changes in estimates – by ostensible reason for change
- Tracking changes in range
- Point sightings outside known or possible range
- Atlas approach: quarter degree square distribution maps based on point sightings
- Web-based data collection
- Spatial modeling of elephant distribution in relation to human density, land use, and biological and climatic variables

4.3.1 Challenges

- Sustaining data flow to keep the database current
- Finding regular funding – due to donor fatigue
- Implementing innovation – limited manpower and technical resources are constraints

4.3.2 Questions and discussions regarding the African elephant database

- China wanted to know if any new species of African elephants had been reported.
Dr. Dublin: No, but genetic work is looking to separate forest elephants from savanna elephants. Now there is also discussion about a third species which could be the origin of the forest and savanna elephants.

4.4 HABITAT CONSIDERATIONS – FRAGMENTATION AND LOSS

A presentation on habitat considerations was made by Mr. Ajay Desai focusing on the habitat requirements of elephants, the threats posed to the habitat and the issues involved in its management.

All the range States recognize habitat loss and fragmentation as the major threat to Asian elephants. To understand and deal with the issues involved we need to look at four components; namely, what constitutes adequate habitat for elephant conservation; what are the threats to the habitat and how they affect elephant conservation; how do we deal with these threats; and lastly what kind of information do we need?

4.4.1 What constitutes adequate habitat for elephants?

When we look at elephants' spatial requirements we need to take into account their social organization, their ranging behavior, and their ecological requirements. Elephants live in matriarchal societies where females live in cohesive groups with strong social bonds, and males are solitary but interact with other males and females within their home range. Genetic studies done by Fernando and Lande (2000) indicate that females in a group are related. A population or sub-population could be composed of several clans and independent males.

Clans have well defined home ranges and show strong fidelity to it; all clan members show coordinated movement within the clan's home range. Clans may also have well defined seasonal ranges within their home range, and here too they show strong fidelity to these seasonal ranges and to the routes they use to move between them. Home ranges of different clans may overlap partially or totally, but there is temporal separation in resource use which is governed both by availability of resources and dominance hierarchies. While elephants are extreme generalists, having adapted to habitats that range from dry thorn forests to wet evergreen forests, they are finely tuned to the spatio-temporal variations in the resource availability within their home ranges and have very specific strategies to exploit them. Baskaran (1998) has shown that even when there is 80% overlap between the home ranges of different clans, the use of different vegetation types and food plant species varies significantly. Managers need to realize that they are dealing with very specific social units that are fixed spatially and cannot be moved around freely at will.

Clans are likely to leave their home ranges only when exposed to severe stress like extreme droughts, severe poaching, overpopulation, severe human disturbance or when the habitat within a home range is lost or highly degraded. The entire clan or a part of it may break away and wander in search of better habitat; such movement is an indication that there are serious problems.

Studies in south India indicated home range sizes as large as 600 km² for females and 350 km² for males (Baskaran, *et al.* 1995), while a study done in north India indicated home range size of 184 to 327 km² for females and 188 to 408 km² for males (Williams *et al.* 2001). In Sri Lanka, home ranges sizes up to 29 to 160 km² for females and 53 to 345 km² for males have been reported (Fernando *et al.* 2005). While some smaller home ranges have been observed it must be borne in mind that these smaller sizes are likely to be representative of clans with compressed home ranges due to habitat loss or competition. This would indicate that habitat patches less than 250-300 km², even when having suitable shape/structure would be barely enough to hold an undisturbed home range. Desai (1991) and Baskaran *et al.* (1995) have shown that even when there are large clusters of PAs, home ranges of all clans and males are not necessarily protected and parts of some home ranges extend into areas outside PAs; similar inference can be drawn from the work by Fernando *et al.* (2005).

Wildlife managers need to view spatial requirements of elephants in terms of the spatial needs of clans and males that have fixed and well defined home ranges, rather than as space *per se*. Given that we do not have enough data on spatial requirements of elephants, conservation needs are best served (at present) when we conserve large, intact, and undisturbed habitat patches so that there is greater possibility that long-term needs are more likely to be addressed.

Because elephants are adaptable, long-lived, and capable of withstanding a lot of environmental stress (especially adults and sub-adults) they will persist in fragmented and poor quality habitat or in small isolated habitat patches for decades. Presence of elephants, even at high densities, in such situations should not be viewed as an indication that all is well or that the habitat is suitable or adequate. Such unsuitable areas are likely to represent population sinks, where environmental stress coupled with HEC will eventually result in the extirpation of such marginalized populations.

4.4.2 Threats to the elephant habitat

4.4.2.1 Habitat loss

The estimated original range of the Asian elephant was 9 million km² but it has declined to about 500,000 km² today (Sukumar 2003). Habitat loss has always been a problem for Asian elephant conservation, however it was mainly in the second half of the last century that the problem accelerated and became very serious. This period ties in with the rapid growth of human populations and economic development in Asia. Forest cover in Sri Lanka declined from 44% in 1956 to 22% in 1988. In Peninsular Malaysia and Sabah, forest cover was 90% in the early 1990s but it declined to 58% in Peninsular Malaysia and to 45% in Sabah in the 2000's. Cambodia saw a rapid decline of forest cover from 73% in 1970 to 53% in 2000. Similarly, Lao PDR saw a decline in forest cover from 73% in 1970 to 47% in 1981. Myanmar's forest cover declined from 47% in the mid 1970s to 36% in 1988. In China's Xishuangbanna National Nature Reserve, which contains 80%

of China's elephants, forest cover declined from 70% in 1950s to 26% in 1980. In India, during the period 1991-99, nearly 1800 km² of forest (mostly elephant habitat) was lost in Northeast India (Bist, 2002; Forest Survey of India, 2000).

4.4.2.2 *Habitat fragmentation*

Unplanned and diffuse development that causes habitat loss also results in habitat fragmentation as it breaks up large habitat patches into smaller fragments. In the absence of a mechanism that monitors and guides development while taking into account elephants, most development has resulted in compounding the problem of habitat loss with the problem of habitat fragmentation.

Another threat that is increasingly felt is linear development which most often takes the form of human settlements and agriculture along roads or rivers (Desai 1998). While the actual amount of habitat lost may be small, the impact is severe as it results in habitat fragmentation and often denies access to critical resource (like rivers). With transport needs rapidly expanding in the range States, roads are being upgraded into multilane highways with heavy traffic that do not allow elephants to cross. Similarly railway lines, irrigation canals, pipelines, and other linear constructions that act as barriers to the free movement result in the fragmentation of elephant habitat. The danger lies in the fact that the true impact is not recognized due to the small extent of habitat that appears to be lost to such development. Such threats have been identified in northwest Sri Lanka, where Desai (1998) has shown that linear development has resulted in the home ranges of several clans and males being fragmented into 2 or more habitat patches. In such situations, elephants cannot move across their home ranges without trampling through agricultural and human use areas and thereby exacerbate HEC issues.

Another important issue that needs to be considered here is the shape of the habitat patch. Unplanned development can leave behind habitat patches that are not always well-shaped and are therefore not suitable for elephant conservation. For example, a habitat patch that is 20 x 20 km is better than one that is 4 x 100 km though both have the same area (400 km²). So managers should recognize that along with size, shapes of habitat patches are also crucial. Desai (1998) has shown that many PAs in Sri Lanka cannot function as stand-alone elephant conservation areas because their poor shapes do not allow normal intact home ranges to be contained within them.

4.4.2.3 *Habitat degradation*

Habitat degradation remains a major threat in Asia and can take the form of direct removal of resources useful to elephants e.g. grass and trees can be reduced or removed by cattle grazing, fires, and fuel wood and timber harvesting. Degradation can also take place when human activities bring about structural changes in the forest rendering them unsuitable for elephants. Examples of such structural changes include repeated forest fires which can change composition of the vegetation, introduction of exotic weeds

interfering with growth and establishment of native vegetation and frequent slash and burn agriculture which could result in only degraded scrub forests regenerating. Slash and burn agriculture remains a major threat to elephant habitat. From 1987-97, approximately 17,300 km² of forests in Northeast India were exposed to slash and burn agriculture, of which at least 50% was elephant habitat (Bist, 2002; Forest Survey of India, 2000). Human presence in the forest can be a major source of disturbance to elephants; Desai and Baskaran (1996) have shown that ranging behavior can be adversely influenced by human presence.

Elephants, being keystone species, can also have an adverse impact on their own habitat (and that of other species) when present at high densities. Given the extensive loss and fragmentation of habitat, it is likely that many of the existing populations represent compressed populations with elephants living at higher densities than normal. This would be especially true for areas where poaching is not a serious problem. Local overabundance though recognized as a problem (Baskaran and Desai, 2000), has been given little attention.

4.4.3 Acquiring adequate habitat to support long-term conservation goals?

Asia has one of the highest human population densities in the world and it is expected to grow dramatically over the next 50 years. For range States with large elephant populations or large areas of elephant habitat (India, Myanmar, Thailand, Sri Lanka, Malaysia, Indonesia, Cambodia and Lao PDR), human population growth will be a significant problem, with many projected to increase between 39% and 96% by the year 2050 (Population Reference Bureau; www.prb.org/pdf05/05WorldDataSheet_Eng.pdf). Even where the projected population growth is low (e.g. Sri Lanka 14%, Thailand 13%) the existing human population density is already high. The only exceptions appear to be Myanmar and Lao PDR, but even here the population growth is likely to have an adverse impact. Additionally, in most range States the population is largely rural (56% to 85%) and a significant part of it (33% to 81%) lives below the poverty line (on less than US\$ 2/day), this results in more people living within or close to elephant habitat and also being more dependent on it for their survival (the only exception is Malaysia). With increasing economic aspirations of this largely rural and growing population, the pressures on elephant habitat are bound to increase significantly in future and hence it becomes important that we address the issue of habitat conservation seriously now.

- Minimize habitat loss and where loss is inevitable minimize its adverse impact through proper planning

There is an urgent need for land use planning that takes into account both elephant conservation and development needs. Where there are justifiable developmental needs, and where habitat loss is inevitable, the conversion of elephant habitat for human use needs to be done in a well planned manner so as to minimize its adverse impact on elephants and the HEC resulting from that loss. This can be done using an elephant- specific ‘Environmental Impact Assessment’ (EIA) that stops poorly planned development and where development is justified,

- recommends suitable actions to avoid or minimize the adverse impact of the proposed development.
- Secure corridors and ensure that further fragmentation does not take place; stop linear development.

Habitat fragmentation is a serious problem and there is a need to identify, assess, and prioritize all corridors so that critical and vulnerable corridors are adequately protected and further habitat fragmentation is stopped. Problems created by linear barriers (canals, roads, rail lines, etc.) can all be resolved if adequate and appropriate mechanisms are put in place to facilitate animal movement across them.
 - Establish Managed Elephant Ranges (MERs); this will address the need to have large areas managed for elephants without the need for creating new or larger PAs.

An analysis done by Leimgruber *et al.* (2003) showed that only 8% of the elephants' range lies within PAs at present. In reality, range States have made significant contributions towards conservation in terms of establishing PAs. Thailand has over 20% of its land area committed to PAs, Lao PDR has set aside 14% of its land area as PAs under the National Protected Areas network and has an additional 8% set aside as provincial and district conservation areas. Cambodia and Sri Lanka have set aside 18% and 13% of their land areas as PAs, respectively. In those range States where the percentage of land area under PAs is small, it generally reflects the lower percentage of forest cover in that country; for example India has less than 4% of its land area designated as PAs but this translates into nearly 25% of the good forest cover. Such large commitments to the PA system make it very difficult for these countries to significantly expand the area under the PA network. Some range States have realized this problem and have recognized that the way forward is to designate elephant habitats outside PAs as 'Managed Elephant Ranges' (MERs). MERs are multiple use areas where human use and exploitation of the area is permitted but in a manner which does not alienate the habitat to elephants. Ideally MERs should function as habitat corridors between PAs, provide additional habitat outside PAs, or function as stand-alone elephant conservation areas. In all cases, MERs would bring significantly large areas of elephant habitat under a management system that supports elephant conservation. Several range States have already started acting on this approach and India has established MERs under the name 'Elephant Reserves' with administrative support, management planning, and funding that directly focuses on elephant conservation.
 - Discuss and resolve the problem of small isolated populations that are in serious conflict with the surrounding human population and which do not have any long-term conservation potential.

Such populations could act as sinks for conservation resources with no real long-term benefits. Captures, translocations, etc. are among the options available to resolve this problem, but all these need to be carefully studied to assess their potential, impact and effectiveness in resolving the problem.
 - Develop a clear and coherent national policy and land use planning processes needed to support the above activities.

All the above mentioned activities would require a clear national policy that supports such actions and also a clear and well thought-out land use planning process with the necessary legal and regulatory framework to support its functioning.

4.4.4 Information needs

- Data on the behavioral ecology of elephants is inadequate, and even this limited information is generally not taken into consideration when formulating conservation and HEC mitigation strategies. This minimizes the impact of conservation and management efforts and results in a failure to resolve problems effectively. A better understanding of home range sizes, ecology and densities in different vegetation types would be very useful for management.
- A better understanding of the interaction between elephants and their habitat will be important given the fact that many elephant populations are eventually going to be confined to isolated patches of habitat in future.
- There is a need for a database on habitat status so that managers can monitor trends, identify and assess threats, and take informed decisions.

4.4.5 Questions and discussions regarding habitat considerations

- Dr. Nagendran (USFWS) mentioned that one of the projects they are supporting in Sri Lanka is for elephants to continue to use the landscape where the villages remain fenced in and tracking data shows that elephants are not coming into conflict with people.

Mr. Desai: Yes, you need an understanding of site specific ranging behavior, and then it is easier to address some of the site specific management problems.

- Sri Lanka stated that they were working with scientists and that radio tracking data had shown that elephants are using areas outside PAs. They now have proposed this ‘Managed Elephant Reserve’ be added as an amendment in the legislation.

Mr. Desai: I agree, we need to start addressing the elephant populations that live outside PAs, and MERs are the way to do it.

- Nepal wanted to know about migration/seasonal movement and how far elephants move.

Mr. Desai: Elephants move between seasonal ranges within their home range but all movement is confined to the home range and that (home range size) decides how far they move.

- Sri Lanka observed that if you go by the lowest population estimate for their country (3,500 – 4000 elephants) then they had only two options, either capture and domesticate or establish MERs to conserve elephants outside their PAs. . Then there is the issue of still having some elephants living outside even these proposed MERs – what do we do with them?

Mr. Desai: Large numbers of captives only add to the financial burden as there is no large-scale demand for captive elephants. MERs that address the needs of

those elephants that live outside the PAs are the only solution currently available. The issue of elephants that still remain outside the PAs and MERs is a very important point and it needs the attention of the group. The group needs to find answers to such difficult questions that managers face.

India: It may not be necessary to always have PAs for elephants. You can do it in other ways such as by just managing habitats for elephants.

- During this question session – the habitat integrity and HEC intensity map prepared by the Smithsonian Institute, which was shown by Mr. Hedges, came up for discussion as a lot of countries were interested in discussing it. This was a map based on a GIS analysis of habitat status and human disturbances, and predicted HEC intensity based on these. Seven of the range countries pointed out that the map wrongly depicted the status of the habitat and HEC intensity. The Director of MIKE too questioned the quality of the map and commented that ‘if you want to make a map, then ground-truthing is very important in order to check the actual situation on the ground’.

Dr. Dublin: It takes time to accurately portray this. The process is important.

- Dr. Dublin: What about habitat fragmentation? What are countries doing about it?

Cambodia: We are developing a forest management plan. The country is divided into 55 divisions and each division is required to provide some zoning indication – e.g. for conservation zones, etc. The process is taking a long time.

Nepal: We have taken the landscape approach to conservation – trying to link 4 PAs in Nepal and 7 PAs in India. The strategy includes a community development programme, restoration of corridors, and buffer zone management. We are hoping to prepare a national elephant action plan this year.

China: We developed an Asian Elephant plan 3 years ago. After we removed farmers from the PA and left it for the elephants to use, habitat succession resulted in the area, making it unsuitable for elephants.

- Mr. Desai: Important to look at elephant conservation in the broader perspective of biodiversity conservation. So habitat succession may be acceptable if your conservation goals include biodiversity conservation.
- Dr. Dublin: What about cross border issues?

Thailand: With regards to Myanmar – no progress on cross border issues.

China: We had a dialogue with Lao PDR in the past (3 years ago) and look forward to working with Myanmar in future.

Myanmar: The habitat is very suitable for elephants – along the China-Myanmar border, extensive habitat is still available.

There were further discussions (between States) on how to deal with cross border issues.

- Dr. Dublin (brief sum up) explained how we could make databases better and also noted that range States needed to work on cross border issues
- Mr. Desai: Comments
 - The Smithsonian map is just a demonstration of what can be done using GIS tools. Range States should be encouraged to provide inputs and improve the map.
 - ‘Managed Elephant Ranges’ – India has already done this, others need to follow. Sri Lanka has raised a very important issue – “what do we do with the population

- outside (PAs and MERs)?” and we, as a group, need to find answers to this difficult question.
- It is important that we standardize data collection protocols for conflict – but there also is a need, to understand, to take into consideration and to sympathize with the human suffering and sentiments that are not captured, reflected or evaluated in numeric data collection protocols or databases.

4.4.6 Key issues highlighted

- The growing human population will only increase the pressure on the habitat in future so we need to address today’s problems while planning for tomorrow’s pressures.
- Wildlife managers need to integrate behavioral ecology of elephants into conservation planning and management.
- Managed Elephant Ranges – creation of multiple use areas, with an elephant conservation component, are a viable option to manage elephant populations that are outside PAs.
- Management of cross border elephant populations (Thailand-Myanmar-Lao; Lao-Cambodia; India-Nepal; India-Bangladesh; India-Bhutan...). Range States need to work together and address this issue.
- Management of small populations in isolated habitat pockets. If these are highly problematic, what needs to be done? Is capturing and taming a viable option? A solution needs to be found.
- Need for a database on habitat to monitor status and assess threats.

4.4.7 Recommendations

- **Habitat loss and fragmentation needs to be stopped through proper land use planning that is supported by a clear national policy; There is a need to develop and use an elephant specific EIA process to minimize the adverse impact of developmental activities on elephant habitat.**
- **We need to consider the option of using Managed Elephant Ranges for bringing greater parts of the elephant population and habitat under protection and management.**
- **We need to increase our knowledge of behavioral ecology of elephants and incorporate it into the conservation planning process.**
- **Enhance collaboration and cooperation between range States to manage cross border elephant populations.**

4.5 HUMAN-ELEPHANT CONFLICT (HEC)

A presentation on HEC was made by Mr. Ajay Desai; this is summarized below.

HEC results in both elephants and humans suffering; it results in the loss of human lives, loss and damage of crops and property for humans; and for elephants it involves loss of life, injuries and loss and degradation of habitat. However, it is mostly the human costs that are taken into consideration when talking about HEC, and as such the focus remains on how to stop crop and property damage and loss of human lives.

4.5.1 Why do elephants raid crops? What does their behavior tell us?

- Opportunistic raiding: If given the opportunity (unprotected crops and no disturbance), elephants will raid crops when they encounter them as they see crops as food – a new resource within their home range.
- Obligate raiding: When habitat loss, fragmentation or degradation severely reduces the size or quality of the habitat within a home range, the affected elephants will raid crops out of necessity. The only alternative to crop raiding is slow starvation due to scarcity of natural food resources.

It is important for managers to recognize the fact that only elephants (clans) whose home ranges have been lost (totally or a significant part) or severely degraded will become obligate crop raiders. Young males that are establishing their own home ranges after leaving their natal clan could end up in or around agricultural areas and become crop raiders by associating with other animals that raid crops. Studies done by Balasubramanian *et al.* (1995) show that only some clans and males raid crops and all elephants are not crop raiders. Data from Fernando *et al.* (2005) and Williams *et al.* (2001) support this view. In cases where severe compression of elephants into smaller habitat fragments occurs, the resultant high densities or high levels of habitat fragmentation would affect all elephants in that area and then all are likely to raid crops.

4.5.2 Status of HEC in Asia

- HEC is present in all 13 range States and is a serious problem in many of them.
- Habitat loss, which is the root cause for HEC is a problem in most range States and is expected to increase with increasing human population and development.
- Elephants involved in HEC have been killed in 10 of the range States, harming elephant conservation. In Sri Lanka “The conflict has escalated in the recent past: during the last decade alone, a total of 1,369 elephants were killed of which the largest numbers (526 animals or 38.4%) perished in the north-west” (Hendavitharana *et al.* 2004).

- The intensity of HEC ranges from a few reports of crop raiding in some countries to 476 people killed by elephants in a ten year period between 1980 and 90 in the state of West Bengal in India (HEC intensity varies across the elephants' range in Asia).
- HEC mitigation methods vary a lot, from the use of noise to drive away crop raiding elephants to the use of electric fences and elephant-proof trenches. Large-scale operations include:
 - Use of capture as a tool to resolve HEC, which has resulted in a captive population of nearly 500 elephants in Sumatra (many more have died in these capture operations);
 - Use of translocation as a HEC mitigation tool in Malaysia resulted in 482 elephants being captured and translocated from 1974 to 2001. The status of the translocated animals is not known due to lack of monitoring;
 - The Indian Government spends US\$ 2.2 – 3.4 million per year as compensation for HEC.

4.5.3 Why is HEC considered such a serious problem?

Managers and researchers often point to the fact that elephants are responsible for a small proportion of crop loss when compared to other causes like natural disasters or pests (rodents, insects, birds, etc.). Yet, elephants are considered a serious problem. The reasons for this perception are given below:

- Natural calamities like droughts or floods are beyond the control of people and governments, and people recognize and accept it (as fate).
- While people acknowledge that other pests like insects, birds, rodents, and wild pigs cause more damage than elephants, they do not compare these with elephants because they have the right to deal with them; i.e. they can kill/eliminate these other pests (even when illegal, the laws are generally not enforced in such cases). Elephants are also much more difficult to stop or drive away. And unlike other pests that usually affect the entire agricultural community, elephants affect only a few people making them an added burden to those affected.
- Elephants and the damage they cause are highly visible and are also viewed as belonging to the government (because they are protected).
- Unlike other pests, elephants threaten the lives of people and sometimes attack them in their homes.
- Unlike other pests, elephants are a long-lived problem – a single sub-adult male can become a local problem for nearly 40 years if it is not dealt with.
- Elephants are also different because of the hidden costs of HEC that managers/scientists often fail to take into account:
 - When one house is attacked or one human is killed per year in a cluster of 10-20 villages - it is like a game of Russian roulette, no one knows which village is next and who will be the next victim, the constant fear of attack and death are a source of stress. This rarely gets captured when economic losses are calculated.
 - The day-to-day costs of protection (torches, batteries, fuel, fire crackers, etc.), further eats into resources that could have been better used for improving the

quality of life. The implications of this loss on the quality of life are not measured when economic costs of crop protection are taken into account.

4.5.4 Why is there less tolerance?

The spate of retaliatory killings of elephants involved in HEC that have taken place in the recent past has made managers and conservationists wonder why tolerance has been declining in a region that appears to have tolerated this species well in the past. Some of the major reasons for this change are listed below

- In the past, problem elephants were generally destroyed. In Sri Lanka, over 5400 elephants were shot by the British in the southern region over a period of 10 years in the early 1900s. There were also large-scale captures of elephants for transport, ceremonial, logging and other purposes. These killing and captures would have happened in and around human settlements and would have reduced HEC.
- Increased access to mass media (news papers/TV) has created greater awareness about better standards of living and peoples' rights to a better life, this leads to increased social and economic aspirations making people less tolerant to losses brought about by elephants.
- In some countries, government actions in the past, namely large scale capture or translocation of problem elephants, have made people used to the idea of elephants being removed to accommodate their needs. When such HEC mitigation strategies are no longer applicable or practical people tend to get frustrated as they feel saddled with what they believe is essentially a government problem.
- Development and prosperity have moved people away from subsistence farming to commercial farming where a higher value is put on losses.
- Increasing human population leads to increased competition for natural resources – so the ability to tolerate loss is diminished.

4.5.5 HEC mitigation strategies

There is an inverse relationship between human welfare and elephant welfare (in areas where there is HEC). Ideally for both species, the total absence of the other would be the best. However in a situation where both need to coexist, it remains for the people and the managers to strike a balance between elephant conservation needs and human needs i.e. to achieve a suitable intermediate position which is acceptable to both the local people and for elephant conservation. Well thought-out and practical management strategies can however extend this intermediate point so as to give both elephants and people a better deal. In the long run there will be a need to manage elephant populations taking into account the carrying capacity of the habitat, so that conservation and HEC issues are addressed. Both short-term and long-term strategies will be needed to address HEC.

- Short-term strategies or stop-gap methods will be needed to address immediate HEC mitigation needs and to buy time to implement long-term strategies.

- Long-term strategies are needed to effectively solve the problem.

The various methods used for HEC mitigation are as follows

4.5.5.1 Compensation

- Direct compensation for crop loss, property damage, and loss of life. Compensation for crop damage has several problems; people tend to exaggerate damage because they feel that the government will not compensate them adequately. Corruption or poor administrative processes can also deprive people from receiving reasonable and timely compensation. However, where adequate compensation is paid, it could lead to a loss of motivation for crop protection. Direct compensation as a major HEC mitigation tool can only be used as a short-term strategy, but eventually it will have to be replaced by other strategies and used only to support severely affected people so that they can overcome crisis situations. Compensation for loss of life, injuries and property damage will be needed on a long-term basis.
- Indirect compensation for crop loss through increased incomes from other sources is a better approach, as it reduces dependency on a single source of income (subsistence agriculture)
 - Alternate non-agricultural sources of income
 - Improved agricultural practices (generates more income)
 - Improved marketing (generates more income for agricultural and non-agricultural products)
 - Revenues generated from tourism or NTFP collection rights/tenures could be used to compensate for HEC.

While people may eventually stop seeing this as compensation, it is still suitable for long-term application as it makes people more resilient to crop losses.

- Insurance – for crops and human lives
- Community support – In some rural communities that practice subsistence agriculture, people (usually the relatives or sometimes the community members) assist others who have suffered crop losses (e.g. in parts of southern Lao PDR). Such traditional community-based support systems can be exploited to assist in HEC mitigation in the short-term, where funds for compensation are not available.

4.5.5.2 Deterrents

These methods may not work effectively in areas with high levels of HEC as elephants can get habituated to most of these deterrents. Some of these methods are more effective when applied from a secure location i.e. tree hides or ground hides with an elephant proof trench (EPT) around them.

- Crop guarding: Human presence and noise can be effective deterrents and are probably the most widely used means of protection. They help to stop opportunistic crop raiding.

- Burning chillies, pepper sprays, other chemicals/odors, etc. are also used or are being tested as deterrents.
- Use of elephant musth odors may not be advisable, as it might disrupt the normal communication among elephants.

4.5.5.3 Barriers

Barriers that operate on the visual, psychological or physical level can be used to stop elephants from raiding crops.

- Fences – ordinary wooden/bamboo/thorn fences are visual barriers and are useful in areas with low intensity HEC. They normally supplement guarding and are also barriers against other wildlife species that damage crops.
- Electric fences – are psychological barriers but can be effective even in areas with moderately high HEC, especially when supported by guarding. However, where crop raiding is obligatory, elephants soon overcome their fear of the fence and break it easily.
- Ropes covered with chilli-grease are being tested as barriers for elephants
- Walls – can be very expensive if they are built to stop elephants; they can be used only in special situations or to overcome weak spots in other systems.
- Elephant proof trenches – are expensive but effective in areas with suitable soil types and where HEC is very severe.

Electric fences, though useful and effective when applied properly have generally failed due to the numerous faults in their applications (some of which apply to elephant proof trenches too). Among the major flaws are:

- Administrative problems brought about by jurisdiction and management issues, and the absence of stakeholders involvement; this has resulted in elephant habitat being fragmented by the fences (elephants present on both sides of the fence), people breaking the fence to get inside the forest, etc.
- Design flaws have created open-ended fences, fences not placed at the habitat boundary, gaps in the fences, etc. all of which have been causes for their failure
- Structural flaws which result in fence routes not being cleared of vegetation, poor quality construction, inadequate power, etc. were also causes for failure
- Absence of sustained application, poor maintenance and monitoring have also been major reasons for failure

4.5.5.4 Removal of one of the causes for HEC (crops/people or elephants)

HEC occurs because people live and practice agriculture in or near elephant habitats and elephants raid crops that are grown by these people. By removing one of the components (people/crops or elephants) from this equation, HEC can be stopped.

- Shifting agriculture/settlements out or away from elephant habitat is a possible solution in some cases (very expensive, but it has been done in some countries).
- Changing crops – by growing crops that are not eaten or seriously damaged by elephants (e.g. oranges, chillies, etc.) crop damage can be minimized but this approach needs to take into account the socioeconomic implications and feasibility based on local agricultural conditions.
- Removal of elephants – this could take the form of a) removal of a few select problem animals b) removal of an entire population c) removal of a few elephants to manage the elephant population in a manner that suits conservation and HEC management.
 - Capture: this raises the question of what to do with the captives as there is very limited demand for captive elephants.
 - Translocation: 1. Short drives - result only in providing temporary relief as elephants return and they also result in elephants being driven from one village to another. 2. Long drives or capture and translocation of individual elephants or groups of problem elephants - appears to solve the problem more permanently but in reality they may only succeed in shifting the problem elsewhere. The conservation implications of this action are also not known.
 - Culling: officially sanctioned culling may not be socially acceptable at present but it is often practiced by the people illegally (in retaliatory killings).

4.5.5.5 Land use planning and elephant population management (long-term solution)

- Stopping habitat loss, fragmentation and degradation, the root causes of the problem:
 - Stopping habitat loss, fragmentation, and degradation through proper land use planning at the landscape and local level
 - Developing and putting into practice an elephant specific EIA process that takes into account the requirements of elephants and people. It will stop poorly designed development activities and where habitat loss is inevitable it will help minimize the adverse impact of any habitat loss through proper planning.
- Addressing the problems inherited from the past through effective land use planning and restructuring of the boundary between human use areas and elephant habitat
 - Unplanned development has resulted in creating a mosaic of elephant habitat and human use areas with diffuse boundaries between the two. There is a need to restructure the landscape to create hard and clear boundaries between the two, so that the overall landscape and the boundary are more conducive to HEC mitigation. Ensure that the perimeter of the enclosed area is small so that the minimal area is exposed to HEC and the costs of protection are also minimized.

4.5.6 Reasons for the failure of many HEC mitigation strategies in the past

- Root cause for HEC (habitat loss) has not been stopped.
- Absence of a clear policy and strategy to deal with HEC.
- An *ad hoc* approach to HEC resulting in knee-jerk responses to crisis situations rather than a well planned long-term strategy to resolve the problem on a lasting basis.

- Improper application of HEC mitigation methods.
- Absence or poor involvement of stakeholders (especially local communities).
- Absence of monitoring that would allow an adaptive approach.
- Absence of a scientific approach; poor understanding of elephant biology; use of simplistic assumptions that may not be true.
- Absence of an understanding or assessment of the scalability and long-term applicability of HEC mitigation measures.
- Absence of sustained application of HEC mitigation strategies.

4.5.7 How should we go about it?

- There is a need to shift to realistic and practicable management based on good data.
- There is a need for a holistic and integrated approach to conservation and HEC mitigation.
- There is a need for a clear and well defined National Policy for elephant management
 - Governments may require clear guidance and support from the conservation and scientific community to develop such a policy;
 - A well defined policy would at the very least commit the government and conservationists to a specific course of action and move us away from *ad hoc* management;
 - The Policy can only be implemented successfully if it is backed by a well thought-out and practical strategy that addresses all relevant issues.
- Need for vertical and horizontal integration: Vertical integration would address within Department operations, bringing about coordination between national, province/state and district level administrations. Horizontal integration would address the need for coordinated action by linking various government departments, private sector agencies, NGOs, communities, etc. into a single force working to resolve/minimize HEC.
 - This needs a National Policy, and the legal and regulatory framework to support vertical and horizontal integration
 - There is a need to clearly identify actions/processes needed and the people/departments responsible for implementing those actions
 - It also needs a monitoring mechanism that oversees implementation

4.5.8 Key issues highlighted

- Habitat loss the root cause of HEC is not being addressed effectively.
- HEC mitigation strategies are either not well planned or improperly applied resulting in failures.
- Lack of information on the behavioral ecology of elephants and its implications for HEC mitigation undermines HEC mitigation work.
- Inadequate policies to address HEC.

- An adaptive strategy is needed so different approaches are used to mitigate HEC in different situations.
- Is translocation a viable option for problematic wild elephants? There is a need for detailed studies.

4.5.9 Recommendations

- **There is a need to shift to realistic and practicable management approach that is based on good data and which takes a holistic and integrated approach to conservation and HEC mitigation**
- **Need to develop suitable National Policy and strategy to address HEC.**
- **Develop cross-sectoral policies to address HEC through cross-sectoral land use planning.**
- **Need for coordination between government agencies, local communities and all other stakeholders**
- **Need to standardize the measurement and interpretation of HEC.**
- **Need to design guidelines to address HEC.**
- **Need to assess habitat needs of wild elephants and the mechanisms of HEC.**
- **Share information related to HEC between range States.**
- **Promote education and awareness to enhance tolerance/co-existence.**
- **Raise funds to address/mitigate HEC.**

4.6 PRESENTATIONS BY RANGE STATES – HUMAN-ELEPHANT CONFLICT

There were presentations on the status and management of HEC by India, Sri Lanka and Malaysia.

4.6.1 India: HEC mitigation in India

Presentation by Dr. R. B Lal, Inspector General Forests (Wildlife), Ministry of Environment and Forests.

India has the highest elephant population and is among the range States with the highest human population densities. But, an analysis of human population density, elephant population density, and number of deaths within different regions in the country did not show any clear co-relation. However, HEC is widespread and its intensity varies across the elephant range in India. Overall in India, HEC is a serious problem and the country spends between US \$ 2.2 – 3.4 million per year on compensation for HEC. On average, 292 people are killed annually by elephants in India (between 2000-01 and 2004-05).

HEC also poses a threat to elephants in India, in 2002-03, a total of 46 elephants were electrocuted and a further 7 were poisoned. These deaths are likely to be HEC related and

they account of 36% of all elephant mortality recorded during that period. In the same period poaching for ivory was responsible for 29% of the mortality recorded.

As a part of the objective of conserving elephants and resolving HEC, 'Project Elephant', a project aimed at elephant conservation that was launched in 1994 by the Government of India, has the following aims:

- Strengthening of measures for protection of wild elephants from poachers;
- Development of scientific and planned management for conservation of elephant habitats and viable populations of wild elephants in India;
- Ecological restoration of existing natural habitats and migratory routes of elephants;
- Promotion of measures for mitigation of HEC in problem areas and moderating human and livestock pressures on crucial elephant habitats;
- Eco-development;
- Veterinary care;
- Research on issues relating to elephant conservation;
- Public education and awareness programme and capacity building of field staff, mahouts and veterinarians.

The project has established 26 'Elephant Reserves' which are synonymous with 'MERs' and which cover the bulk of the elephant range in India. Elephant Reserves cover both existing PAs and habitat outside PAs.

In terms of direct actions to mitigate HEC, the government has taken the following steps:

- Habitat management
 - Habitat enrichment and reforestation
 - Fodder plantations
 - Waterhole creation and maintenance
- Other actions
 - Community and eco-development in elephant habitat outside PAs
 - Publicity and awareness campaigns
 - Compensation
- Physical and psychological means of keeping elephants and people apart
 - Elephant proof trenches
 - Electric fences
 - Elephant drive squads
 - Capture of problem animals
- Research
 - Development of rice varieties that are not relished by elephants
 - Development of elephant-proof grain storage bins
 - Development of elephant repellents

4.6.2 Sri Lanka: Ex-situ and in-situ conservation efforts in Sri Lanka

Presentation by Mr. D. Kariyawasam, Director General, Department of Wildlife Conservation.

Sri Lanka has an estimated population of 3500 to 4500 wild elephants spread over 40,000 km² of habitat. The range is largely confined to the dry and the intermediate zones, with only two very small populations present in the wet montane zone. Elephants are the main conservation objective of 10 of Sri Lanka's 18 National Parks, and in addition there are several Wildlife Sanctuaries that also support elephant conservation. Despite this, nearly 50% of the elephants range lies outside PAs. The main threats to elephants are habitat loss and fragmentation, HEC, and poaching.

Large-scale conversion of elephant habitat for agriculture coupled with slash and burn practices have created a mosaic of elephant habitat and human use areas, and have resulted in serious HEC. Forest cover in Sri Lanka has declined from 84% in 1881 to 22% in 2001, while the human population has gone up from 2 million in 1881 to 19 million in 2002. Crop and property damage, loss of human life, and retaliatory killing of elephants are the consequences of HEC. HEC results in approximately 65 human and 150 elephant deaths every year.

Compensation, provision of deterrents, translocation of problem elephants, elephant drives, and habitat management have been the main methods for mitigating HEC. Barriers like electric fences have been ineffective, mainly because they are psychological barriers and elephants soon learn to overcome them. Electric fences which are expensive and high on maintenance, also fail due to poor application.

One of the consequences of HEC has been the increasing number of orphaned calves. To address this problem, the Pinnawala Elephant Orphanage was established to manage the orphaned calves. The Elephant Transit Home was established later, with the objective of rearing these orphans for re-introduction (as small groups) into the wild, and so far the efforts have been successful. However, the National Park where the orphans are being released already has a high elephant density and in future it will be difficult to find places suitable for such re-introduction.

In conclusion, we need to bring about effective management through:

- Planning conservation action at a landscape level
- Switching to adaptive management
- Improving habitat management goals
- Proper design and maintenance of electric fences
- Reducing competition from feral or domestic species
- Need to address policy and governance issues
- Developing a national policy for management of elephants
- Developing strong and bold leadership and the political will to support conservation
- Working with communities and taking proactive actions to mitigate conflicts

- Developing an adequate and efficient compensation mechanism for crop losses and elephant depredations
- Community awareness programmes
- Providing economic incentives to communities

The factors that provide positive support for elephant conservation are:

- High genetic diversity
- Ex-situ breeding technique has been mastered
- Great deal of knowledge about Asian elephants available
- Great desire among people to protect elephants
- Wild populations breed very well

4.6.3 Malaysia (Peninsular): HEC in Peninsular Malaysia

Presentation by Mr. Salman Bin Haji Saaban, Siti Hawa Bt. Yatim and Nasharuddin Bin Othman, Department of Wildlife and National Parks

Peninsular Malaysia has an estimated population of 1220 to 1460 wild elephants spread across 7 states. Taman Negara National Park is the largest PA in Peninsular Malaysia and holds the highest population of elephants, estimated to be between 290 and 350. This National Park is also the main site for the release of translocated problem elephants.

Elephants are the second most frequent cause of wildlife-human conflict after long-tailed macaques. On an average, there are 731 incidents of HEC every year (data for 1998-2005). The bulk of HEC incidents are in the form of crop damage (71%) while creating fear in humans (18%), intrusion into human settlements (5%), and property damage (4%) are the other important forms of HEC incidents. Attacks on humans, form only 1% of the incidents reported. A majority of these incidents take place in large and small plantations or orchards (83%); while villages, other human settlements, and workers' quarters account for 14% of the incidents. Only 3% of the incidents occur along the forest periphery and less than 1% occurs inside the forest. Between 1981 and 2005, a total of 20 people were killed and a further 13 were injured by elephants.

Prior to the 1980s, habitat loss and fragmentation (due to agriculture) were the major threats to elephants but after the 1990s logging was the main threat. HEC increases during logging operations. Capture and translocation of elephants has been the main form of HEC mitigation. It started in 1974 and by 2005 a total 526 elephants were captured and 336 translocated.

4.6.3.1 Case study: Johor State, Malaysia

Conflict was recorded at 75 locations of which 39 incidents occurred in large oil palm plantations and 36 in small villages or small-holder farms. Between 2000 and 2004, the estimated loss due to elephant depredation was RM 1,228,324 and the bulk of it was due

to losses in oil palm plantations (RM 1,148,610) although nearly 17 other crop types were damaged. Oil palms greater than 5 years were not damaged. Preventive measures (electric fences) were applied at only 9 locations (12% of the sites) where HEC took place.

The number of incidents of HEC has been declining and in 1992, 166 incidents of HEC reported. This is because 62 elephants were captured and translocated between 1994 and 2001 as a part of HEC mitigation measures.

4.6.3.2 Conservation problems and issues

- Loss of much of Peninsular Malaysia's lowland dipterocarp forest, which is prime habitat for elephants
- Increasing number of elephants in the wild
- Difficulties in establishment of new PAs for elephants
- Lack of funding for elephant management and research
- Lack of public awareness about elephant conservation especially among the affected human population
- Small and fragmented forested areas for elephants sanctuaries
- Lack of modern technology for controlling HEC and poaching

4.6.3.3 Recommendations

Short-term

- Classify and manage HEC according to elephant group size, tendency to create future disturbances, and habitat availability
- Workshops and dialogue with affected landowners to get them more actively involved in HEC mitigation; current HEC mitigation measures need to be reviewed since 88% of the farms are unprotected (n = 66 locations) and of those protected only 50% maintained electric fencing system
- DWNP's staff: Management staff needs to be equipped with technical knowledge through training and workshops on mitigation measures
- Future research
 - study of home ranges of crop-raiding herds
 - on effective mitigation technique
 - habitat management
 - elephant/plant interaction studies
 - using of GIS applications to identify elephant habitats

Long-term

- Establish more and larger PAs for elephants
- Continue research on elephant populations and distribution
- Create buffer zone between plantations and forested areas
- Increase public awareness about elephant conservation

- Conduct various research studies such as post translocation behavior and movements
- Increase funding for elephant management and research activities
- Promote effective landscape/land-use planning through collaborations with other government agencies
- Promote and enhance elephant-based ecotourism activities

4.6.3.4 Conclusion

We fail to put an appropriate value on Malaysia's elephants and therefore cannot convince policy makers about the need to support conservation or management for elephants.

4.7 HUMAN-ELEPHANT CONFLICT – THE EXPERIENCE IN AFRICA

Dr. Holly Dublin made a presentation on HEC in Africa focusing on the African experience and the vertical integration model for HEC management

The African Elephant Specialist Group has been very active in helping to tackle the HEC situation in Africa. The AfESG has an 'HEC Working Group' that reviews data and provides advice on HEC. The group has been able to provide range States with an 'HEC tool box' that includes numerous technical briefs on HEC and case studies. All these are available in multilingual editions so that all range State members can have access to them. There is also a library of 4,700 abstracted references.

4.7.1 HEC and its mitigation

The causes and effects of HEC are both direct and indirect and operate at the local, national, and international level. The causes range from the growth in human population to levels of consumption. Habitat loss, fragmentation and conversion, and increasing human and elephant populations are also important causes of HEC.

The direct effects of HEC are human and elephant deaths and injuries, loss of crops, damage to property, and damage to elephant habitat. The indirect effects are increased politicization of HEC, increased costs to wildlife authorities, and increased costs to communities. Costs to the communities can be in the form of absences from work or school, reduced productivity, increased poverty and food insecurity, and these all compound the effects of other problems like HIV/AIDs, etc. In turn, this could lead to increased resistance of local communities towards conservation of elephant and other wildlife.

HEC mitigation in Africa has involved the use of land use planning to minimize HEC, the use of compensatory mechanisms to address the damage and losses caused by elephants,

and the use of disturbance-based methods, barriers, and deterrents to keep elephants out of human use areas. Translocation and culling of problem elephants have also been used in some cases.

Wildlife utilization as a HEC mitigation measure has local, national, and international implications. This includes both non-consumptive (international and domestic tourism; sale of live elephants, etc.) and consumptive (trophy hunting, sale of elephant products like ivory, meat, and hides) use of elephants. In addition, the meat from elephants shot during problem animal control operations is also used. This approach helps to increase the tolerance of local communities towards HEC in the long-term and also helps to bring about positive changes in land use planning which in turn aids conservation. However, successful application requires long-term partnerships between wildlife authorities, local communities, local authorities, and the private sector. It is also important that the benefits accrued from such actions go to those directly affected by HEC – but at times this is difficult to achieve. It requires clear user/tenure rights and policies formulated at the national level. However, this approach may be restricted by international pressures and agreements (e.g. CITES).

HEC work has also involved building on positive relationships between elephants and local communities to increase tolerance. The lessons learnt indicate that this has implications only at the local level and depends to a large extent on local attitudes and beliefs. It has helped increase tolerance and thus reduce the impact of HEC. Nevertheless, we still do not have enough understanding of the human dimension of HEC not least because it is very site and society-specific.

One of the major successes was the formation of ‘conflict resolution committees’ to address HEC. These committees are composed of members from the affected communities, wildlife authorities, relevant CBOs, NGOs, and the private sector. The primary objective is to share responsibility for dealing with HEC and it has worked successfully in Guinea, Ghana, and Kenya. The major lesson learnt from this experience is that devolving responsibilities to different local stakeholders helps to combat HEC more effectively and is also more effective in the long-term.

The work on HEC in Africa has shown several fallacies regarding beliefs about HEC. One such fallacy is the idea that one method of mitigation fits all situations. A whole ‘toolbox’ of remedies is needed to find what the most effective tool for specific local conditions is. The intensity of HEC is also not related to the size of the elephant population alone but to a lot of other factors. There is a need to address all HEC related issues and not just symptoms but the underlying causes as well, if we are to resolve HEC. It is also important to realize that elephants cannot be trained to avoid crops through the use of deterrents and that you need sustained and adaptable application of HEC mitigation measures. People’s attitudes and awareness needs to be addressed too: people need to move away from the belief that HEC mitigation is the exclusive task of a single government department (e.g. Problem Animal Control). People need to understand that elephants are not the most serious pest and that there are several other animals that cause much more damage. Successful long-term HEC management requires support from all

levels of government, and this can only be brought about if there are clear government policies and legal frameworks at the local, district, and national level. There is a need to integrate HEC mitigation with all other elephant, wildlife, and land management activities.

4.7.2 Vertical integration model for HEC management

The AfESG is now developing systems for best practice for HEC management and the vertical integration model is major approach in that direction. To date most HEC management has focused on deterrence methods at conflict sites; these are largely short-term measures that are more akin to a ‘band-aid approach’ to HEC management. Furthermore, the methods have often been applied in an *ad hoc* manner and so they have achieved little long-term success. Long-term solutions would need to address the root causes of HEC and this would require actions at higher levels, e.g. cross-sectoral planning within and among governments. Nevertheless, HEC mitigation involves action and involvement at all levels, i.e. local, national, and international. As an example, for HEC management to be effective at the local level, local authorities need to be given more authority in deciding how elephants should be managed, while developing strategies to improve local livelihoods. This however needs a supportive legislation and policy framework requiring the involvement of relevant local and national level authorities. Beyond this local and national level it may require action at the national/international level involving donors, investors, and other sectors to encourage integrated approaches that can simultaneously improve human livelihoods while helping conserve elephants. In addition, higher level approaches may be required to discourage ill-conceived development projects that may exacerbate HEC (e.g. poorly planned irrigation schemes, cash-crop plantations, exploitation/extraction in key elephant ranges, etc.).

4.7.3 Questions and discussions on HEC – the African experience

- Dr. Nagendran gave an example of different agencies working together in India where there were a number of elephant deaths due to train accidents. They found that it was difficult for elephants to get off the track quickly when trains approached them at some locations where they crossed the tracks and at other points they were attracted to garbage thrown from trains. The railways department, the forest department, NGOs and the local communities worked to resolve these problems.
- Mr. Subramanyam: How have you dealt with equity at the local level, especially gender equity?
 - Dr. Dublin: The lowest level that you can work on equity is the best place but it is also very dependent on societal mechanisms. In Africa, women have a big say in conflict resolutions committees.
- Thailand: Have there been any examples of habitat improvement in Africa?
 - Dr. Dublin: There are various experiences. Namibia is a good example: 30-40% of the land is going to be in community conservation areas – and this leads to

- habitat improvement. The challenge is to get devolution of power from the central government.
- Nepal: How do you separate the benefits of elephants from other wildlife?
Dr. Dublin: It's easier in Africa because of the various direct economic benefits – consumptive uses, etc. More generally, we need to look at the broader functioning of the ecosystem as a whole and not just elephants.
 - Sri Lanka: The lack of a coherent policy has been the major factor underlying a failure to achieve effective long-term solutions
 - India: Empowerment is the critical issue at the community level.
Dr. Dublin: Everything is enabled by good governance and a starting point is to give knowledge/information to affected communities.
 - MIKE: There is a need to compile all the information and then assess the need to translate this into the relevant local languages.
 - Nepal: A query on the previous day's presentation (HEC): Is there any technique to assess the impact of elephant raids on crops? What compensation is given for human deaths?
India: The assessments are done by local authorities [in India]; \$2500 per person killed is the official compensation rate in India.
Hedges: Various techniques are available for the assessment of crop damage. One problem for compensation schemes is the need to get an objective assessment that is accepted by both sides (the farmers and the government). Corruption has often been a problem too.
Dr. Dublin: The AfESG has a briefing document on compensation for Africa.

INTERACTIVE SESSION 2: ACTIVITIES THAT WOULD BE NEEDED TO ADDRESS HEC IN THE NEXT 5 YEARS

Following the presentations and discussions on HEC, the Chair Dr. Dublin started an exercise to initiate the range States into the basic problem analysis and strategic planning concept. The objective was to set targets five years ahead and seek solutions at different levels (national, sub-regional and range-wide levels) and identify activities that might be helpful in addressing HEC, if we wanted to make progress five years from now. The range States came up with ideas that fell under the following six headings.

1. Inter-country relationships and cross border cooperation: Considering that most range States share cross border populations, this was an important issue. The need for cross border cooperation was seen as being essential for establishing and managing cross border PAs, for monitoring elephant populations and their habitat, for addressing HEC problems, and for monitoring and management of trade in ivory and elephant parts. Without well structured mechanisms to facilitate interaction and cooperation it would be difficult to achieve successful cross border cooperation, especially at lower management levels.
2. Cross-sectoral land use planning: This was identified as an important tool in addressing long-term conservation and HEC mitigation needs. The importance of having conservation needs integrated into the planning and development processes was seen as being central to stopping ill-advised development that causes HEC and undermines conservation. Where different government departments, private sector organizations and local communities work in coordination, both developmental and conservation goals can be achieved. For this to be effective wildlife authorities need to be actively and effectively involved in land use planning at the local, regional and national levels. The need for standardized mechanisms that facilitate such cooperation and coordination was also seen as important. The need for persuading range State governments to treat environmental issues on the same level as economic issues and the need for increased political will to act effectively were also noted. It was suggested that wildlife authorities take an inter-disciplinary approach to management, including working with sociologists to address human population growth.
3. The importance of basic information on habitat needs, carrying capacity, populations, etc. for management planning, and prioritization of populations and conservation actions was noted. Several countries also felt that there was a need for more PAs to help conserve elephants and minimize HEC. Some felt that direct intervention (habitat improvement/enrichment) was necessary to reduce HEC in areas where the habitat was degraded.
4. Since coordination and interaction among the various stakeholders and various government departments was seen as being important to elephant conservation and HEC management, the need to improve and institutionalize cooperation and

coordination within various government departments, and between policy makers and the local community was considered important. It was also suggested that there be more collaborative approaches in managing species of common interest.

5. The importance of working with local communities to bring about a more positive relationship between people and elephants was noted by several range States. As was the importance of having integrated conservation and development projects (ICDPs) to help local communities improve their livelihoods. It was noted that governments should involve local communities (villagers/researchers) in the HEC evaluation and mitigation process, so that their problems are better understood and more suitable short-term and long-term HEC mitigation strategies are developed. It was also suggested that assistance be provided to develop and apply local and novel methods of HEC mitigation and at the same time the importance of encouraging local communities to solve their own problems was suggested. The importance of putting value on wildlife was noted and it was suggested that 50% of the revenues (from wildlife) be given to local (affected) communities. It was suggested that physical and psychological barriers and safe passage mechanisms be used at critical places to facilitate the safe use of such areas by humans or elephants.
6. Among the other suggestions were:
 - The need to develop effective and suitable HEC mitigation methods;
 - The need to develop standardized HEC damage reporting systems and a code of practice for HEC mitigation;
 - The need to facilitate information-sharing about HEC mitigation among and within range States by setting up effective experience-sharing forums and a common and easily accessible database (that could be accessed through a website).

THE RANGE STATES THEN ENGAGED IN A SECOND EXERCISE AIMED AT PROPOSING MORE CONCRETE ACTIONS TO ADDRESS HEC.

The more concrete actions proposed by the range States to address HEC were categorized under seven clusters, broadly indicating that they would move in these directions:

1. Land use planning and policy development: This was recognized as being central to HEC management. A clear and well-defined national policy would be the key to supporting this. It was recognized that land use planning was needed at the national and local levels.
2. Information sharing and dialogue amongst the range States: The need for more elephant range State meetings to increase communication and information-sharing by range States was considered important. It was suggested that IUCN take the lead role in facilitating information-sharing. Such meetings and cooperation would also help make regional protocols and commitments among the range States in HEC management. It was suggested that HEC management units be set up in every range

State. In addition, it was suggested that standardized guidelines and protocols on mitigation of HEC be developed.

3. Pilot projects: The need to identify local and novel methods for HEC mitigation, and the need to involve local communities in this process were noted. This could be achieved by encouraging and supporting local community based efforts at HEC mitigation. The USFWS was requested to assist such projects where possible.
4. The importance of standardized HEC mitigation guidelines and data collection/evaluation protocols was noted. The participants recognized the following needs:
 - Initiate a process of cooperation among various agencies and stakeholders to effectively manage HEC;
 - Institutionalize community based organizations and empower local institutes to deal with HEC;
 - Set up steering committees at the local level to manage, monitor, and implement any HEC mitigation proposals in their area;
 - Increased transparency in decision making and the need to involve multiple stakeholders in the decision making process;
 - Increased awareness and knowledge about conservation and HEC among policy makers and local people;
 - Policies that support HEC-affected people directly, and for eco-tourism where local people are the beneficiaries.
5. Habitat management: The importance of stopping habitat loss and degradation was noted by several countries and there were suggestions that degraded habitat be restored. The importance of providing adequate time (minimum 5 years) to implement habitat improvement projects was noted. Also, the importance of gaining national support for managing elephant habitats was noted.
6. Education and awareness building: There were several tasks identified under this section, including the need for NGOs to increase public awareness so that there is effective advocacy and lobbying to get governments to involve the wildlife/environmental sector in the land use planning processes. It was also suggested that awareness-building actions target policy makers so that they are aware of the problems faced by the local communities. The need for improving awareness among local communities regarding wild elephant issues and HEC, and how they can benefit from wild elephants was also noted.
7. Funding for HEC mitigation: This is always a crucial issue in conservation, and the need to raise funds from various sources for elephant conservation and for HEC management were discussed in general terms.

5 ILLEGAL KILLING AND TRADE

This session included presentations on the CITES MIKE and the ETIS programs in Asia and presentations by range States on illegal killing of elephants and ivory trade.

5.1 AN UPDATE OF CITES MIKE

This presentations was made by Mr. Nigel Hunter (Director of CITES MIKE), Dr. David Lawson (MIKE Sub-regional Support Officer for Southeast Asia), and Dr. Arun Venkataraman (Sub-regional Support Officer for South Asia)

5.1.1 Background

The CITES Monitoring the Illegal Killing of Elephants (MIKE) Programme is an elephant range States programme authorized by a resolution of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) at the 10th meeting of the Conference of the Parties (CoP10, Harare, 1997).

MIKE is a monitoring system put in place across the entire range of African and Asian elephants, using a site-based system to monitor elephant population trends and the illegal killing of elephants.

5.1.2 Aims of MIKE

To provide the information needed for elephant range States to make appropriate management and enforcement decisions, and to build institutional capacity within the range States for the long-term management of their elephant populations and their habitats by:

- Improving their ability to monitor elephant populations
- Detecting changes in levels of illegal killing
- Using this information to provide more effective law enforcement
- Strengthening any regulatory measures required to support such enforcement
- Using this information and the MIKE institutional arrangements to foster cross border collaborations relevant to cross border elephant populations and ecosystems
- Establishing the MIKE system so that it can be sustainable and continue when external funding assistance ceases

MIKE undertakes capacity building amongst the elephant range States in the following areas:

- Site-based population surveys every 2 to 3 years
- Law Enforcement Monitoring (LEM) to determine any real trends in illegal activities and the factors that may be influencing any declines
- Database management
- Data analysis at the site, national, sub-regional and regional levels

5.1.3 Benefits of CITES MIKE

The main benefit of the MIKE monitoring system will include a much-increased knowledge of elephant numbers and movements and a better understanding of the threats to their survival, as well as the associated knowledge of other species and their habitats generally.

A further benefit will be understanding more fully the impact, or lack of impact, of decisions taken pursuant to CITES so that policy instruments in the international arena can become responsive to the identification of negative impacts or consequences.

5.1.4 CITES MIKE Southeast Asia Programme

The MIKE programme was started in February 2004 and covers 8 countries with 13 sites. The sites selected are:

Cambodia	Cardomom and Mondulkiri*
China	Xishuanbanna
Lao	Nam Phui*
Malaysia	Gua Musang*, Khluang
Myanmar	She U Duang, Alangdaw*
Indonesia	Bukit Barisan Selatan*, Way Kambas*
Thailand	Selakphra*, Kuiburi
Vietnam	Cat Tien*

(* = priority sites)

As a part of the programme, computer and GIS units have been purchased and installed in 7 countries and survey equipment is being sourced and purchased.

Development of a Law Enforcement Monitoring (LEM) training curriculum has been completed, approved by the National Officers and has been translated into all (8) languages. Development of an Information Technology (IT) training curriculum has been completed in English and is ready for approval by the National Officers. The survey training curriculum is nearing completion. Although HEC forms are in use in SE Asia

there has been, to date, no corresponding database to capture this data. A basic database for the HEC data has been constructed and will be refined and tested shortly.

5.1.4.1 Training given

Training in LEM has been given in 6 countries with a total of 135 conservation staff trained. Consequently LEM data collection has started in these 6 countries.

5.1.4.2 Surveys

Data from survey work already done at two sites have been accepted as being current and survey work is in progress in two other countries.

5.1.4.3 Future work

- Nomination of appropriate information technology staff by National Officers and subsequent delivery of MIKE Information Technology training.
- Completion of survey training modules.
- Plan and carry out surveys in the rest of the sites.
- Complete the testing of HEC database and circulate to all countries.

5.1.4.4 Impediments to MIKE implementation

- Misplacement of equipment within range countries (and at sites)
- Lack of communication between the range States and the Sub-regional Support Officer (no regular information flow)
- High staff turnover in range State's departments
- A lack of funding

5.1.5 CITES MIKE South Asia Programme

MIKE South Asia was started in 2003 and a total of 15 MIKE sites were selected for 5 range States in South Asia

India (10 Project Elephant Reserves out of 26 Reserves selected as sites)

1. Chirang Ripu
2. Dehing Patkai
3. Deomali
4. Eastern Dooars
5. Garo Hills
6. Mysore
7. Mayurbhanj
8. Nilgiris
9. Shivallik
10. Wyanad

Bangladesh: Chunati Wildlife Sanctuary

Bhutan: Samtse Forest

Nepal: Royal Suklaphanta Wildlife Reserve

Sri Lanka: Wilpattu MIKE Site and Yala-Bundala MIKE Site

In terms of equipment, a total of 45 GPS units and 15 computers have been distributed among all the MIKE sites in South Asia. Project Elephant (India) has supported MIKE efforts by providing an additional 250 GPS units and 5 computers for use in MIKE sites in India.

MIKE forms have been harmonized for South Asia (including translations where necessary) and are in use at all sites. Database and population survey training material have been adopted for South Asia. LEM, MIKE database, and IT training have been delivered to all 5 range States. Population survey training has also been delivered to all MIKE sites in India and at the Wilpattu MIKE site in Sri Lanka.

Survey strategies were developed and surveys done at all 10 MIKE sites in India and at one site in Sri Lanka (Wilpattu). LEM data were being reported from all sites except from those in Sri Lanka and one site in India. Data are being entered into the MIKE database at 5 sites. Initial discussions were held with Bangladesh and Nepal on refinement of past population survey methods. The Sub-regional Support Officer has facilitated the formulation of Bhutan's population survey strategy. The Steering Committee has requested MIKE to facilitate technical solutions to cross border issues.

Some preliminary assessment of the data was shown as an example of how the data can be used. However, this was only indicative as data sets were not complete nor had they been rigorously tested.

5.1.5.1 Impediments to MIKE

- Poor data flow from sites to National Officers and the Sub-regional Support Officer
- Poor spatial referencing of patrol data.
- Lack of communication between the Sub-regional Support Officer and range States on training and other needs.
- Slow progress with the installation of site base maps on computers located at the site and national offices.

5.1.6 Conclusion

The Director of MIKE, Mr. Hunter, then summarized the current position *vis-à-vis* the MIKE goal of ‘completing the establishment of a baseline during 2006’ and then stated that the next six months would be critical for completing the baseline.

5.1.7 Question and discussions regarding the CITES MIKE programme

- Dr. Nagendran (USFWS): Does MIKE work with NGOs in South Asia?
MIKE: Depending on whether there is a need. In South Asia (e.g. India), there are a wide range of scientific institutions with the capacity and the government departments are also experienced. Nevertheless, partnerships do make sense for combining and passing on skills and this is encouraged.

5.2 PRESENTATIONS BY RANGE STATES - ILLEGAL KILLING OF ELEPHANTS

5.2.1 Malaysia: “Illegal Killing of Elephants (*Elephas maximus*) in Peninsular Malaysia”

Presentation given by Mr. Nasharuddin Othman, Assistant Director, Elephant Management Unit, Department of Wildlife and National Parks.

Elephants were declared a protected species in Malaysia in 1972 under the Wildlife Act. Shooting, killing, or capture of elephants without the permission of the Department of Wildlife and National Parks (DWNP) was prohibited. Only DWNP was permitted to capture or kill elephants. Culling as a HEC mitigation measure was previously used in Malaysia, and between 1959 and 1969, a total of 120 elephants were culled at an average of 1 elephant a month. Culling was stopped in 1974 when the ‘Elephant Capture Team’ was established and the country shifted to capture and translocation as a means for resolving HEC.

Between 1974 and 2005, a total of 40 cases of illegal killing of elephants have been detected; however, between 1998 and 2005 the average has been approximately 3 elephants per year. The bulk of the illegal killing appears to have been a consequence of HEC. Nearly 64% of the mortality was due to poisoning and it is possible that herbicides are used for such poisoning. Gunshot injuries accounted for 20% of the deaths and wire snares were responsible for the remaining 16% of the deaths. A study of the location of the killings again indicates that HEC is the main reason for these killings, with more poisoning and gunshot deaths seen near villages as opposed to forests. The majority of the animals killed were adults (84%) and there appeared to be no sex-biased killing, with 53% of the dead animals being male and 44% being female (4% could not be sexed).

Under the ETIS programme, only 4 ivory seizures were reported between 1995 and 2005. In these four cases, a total of 54 pieces of worked ivory and 2 pieces of raw ivory were seized.

It was concluded that the major cause for illegal killing of elephants in Malaysia was HEC.

5.2.2 Questions and discussions regarding illegal killing (Malaysian presentation)

- Nepal: How many persons were arrested in relation to the cases mentioned and what was the penalty?
Malaysia: For the cases that were mentioned, the people have not been charged because the killing was due to HEC and it could not be established which of the villagers were responsible. It was not poaching (for profit). For the cases involving ivory seizures, people have been arrested. Under the wildlife act, they can only be fined RM 5000.00 and/or sentenced to 5 years in prison. There is a proposal to increase the penalty 10 to 30 fold as the present fine is very low.
- Dr. Nagendran (USFWS): 1. Conflict is high, but killing is low. Have you resolved that by translocation? 2. Have you had success in translocating into wild areas? What experiences can you share?
Malaysia: In the 1980s, there were more translocations but now there are few. Results from the translocations done so far are quite promising as elephants have been using the new (release) areas.
Sri Lanka: Stated that they had extensive experience in translocating problem elephants in Sri Lanka but they did not find it successful.
Dr. Dublin: Gave some examples based on the African experience, noting that guidelines for considerations prior to translocation have been developed. In brief, translocations can work in some places but a number of aspects need to be considered.

5.2.3 India: Skewed sex ratios due to selective removal of males

This presentation was given by Dr. R. B Lal, Inspector General of Forests (Wildlife), Ministry of Environment and Forests.

India has an estimated 26,000 elephants (nearly 50% of the wild population in Asia) and nearly 3400 captive elephants (20 % of the total Asian elephants in captivity). Nearly 49% of the wild elephant population is in Southern India, 35% in Northeast India, 10% in Eastern India, and 6% in North India.

India has faced problems of male-biased poaching (for ivory) that has resulted in biased sex ratios in some populations that were exposed to poaching and had a high percentage of males with tusks in the population. The ratio of males with tusks to males without tusks varies across the country, and the impact of ivory poaching accordingly varies.

South India had the highest percentage of tusked males and this is reflected in the poaching figures which show that the highest level of poaching occurs in the south.

Given below is the percentage of population with different sex ratios (data pooled for India).

Population with > 5 females: 1 male (12%)
Population with 4-5 females: 1 male (7%)
Population with 3-4 females: 1 male (23%)
Population with 2-3 females: 1 male (28%)
Population with < 2 females: 1 male (30%)

Trends in poaching have shown a decline during the period 2001 – 2005. In 2001-02, there were 61 poaching cases while in 2004-05 there were only 17 cases of poaching. This was possibly due to greater funding and support towards anti-poaching activities within the country. Under Project Elephants, funds and support are being made available to habitats that are outside the PAs and as such it is strengthening the protection and law enforcement in the areas where it is normally the weakest. Data however indicates that the bulk of the elephant mortality still occurs due to man mediated causes and a major reason for this could be the increasing incidents of retaliatory killing of elephants involved in HEC. Recent data (2003-04) indicate that HEC related deaths accounted for 36% of the mortality while poaching related deaths accounted for 29% of the deaths.

5.2.4 Questions and discussions on the presentation by India: Skewed Sex ratios

- Nepal: What is the legal status of Project Elephant – is it similar to Project Tiger?
India: Project Elephant is different from Project Tiger in that it is not confined to PAs and covers larger areas (MERs). The implementation of Project Elephant is the responsibility of the government of India. There can be an overlap between the Tiger Reserve (and other PAs) and the Elephant Reserve.
- Sri Lanka: There has been a demand for veterinarians in each of our reserves. Is it a similar problem in India?
India: Not particularly.
- Bangladesh: How do you decide on the cause of death of elephants?
India: A post-mortem is done for all the carcasses of elephants that are found.
- On a general query regarding how sex ratios will be affected by ivory poaching
Mr. Desai: Poaching will affect the various populations differentially because of the differences in the ratio of tusked males to tuskless males in the population.

5.3 ELEPHANT TRADE INFORMATION SYSTEM (ETIS): OVERVIEW AND UPDATE

Mr. Tom Milliken, Director, ETIS gave a presentation to update range State members on the status of ETIS in Asia.

The ETIS and MIKE programmes complement each other. While ETIS tracks illegal trade in ivory globally, MIKE monitors the status of elephant populations at some 70 defined sites in Africa and Asia. Mandated in Resolution Conf. 10.10 (Rev.) *Trade in Elephant Specimens*, the objectives of these systems are:

- To measure and record levels and trends, and changes in levels and trends, of illegal hunting and trade in ivory and other elephant products;
- To assess whether and to what extent observed trends are related to decisions taken under CITES; and
- To establish an information base to support decision making for elephants within CITES.

5.3.1 Overview of planning tools used by TRAFFIC

The basic objective is to assess the ivory trade process at three stages in order to identify the best methods to monitor and stop it. The three stages are the production/source of the ivory, the trade itself, and lastly the consumer/endpoint of the ivory trade. In all three cases, the first task is to identify the ‘regulation weak spots’ and knowledge gaps. In addition, it is important that the source of the ivory, the routes and methods used to move the ivory from source to consumer, and the markets (wholesale, retail, and consumer) are identified.

Ivory trade dynamics in Ethiopia are a good example and clearly show that knowledge of all three components is necessary to understand and deal with the problem. The ‘source’ in Ethiopia involves local poaching, ivory stolen from government stockpiles, and ivory smuggled into Ethiopia from Kenya, Democratic Republic of Congo, and Central Africa. The routes used for import are air and land, while those used for export are land, air, and sea. Ethiopia has a large and unregulated domestic ivory market that facilitates trade in illegal ivory. The analysis identifies the exact areas and processes where management needs to focus its energies and also what type of action is needed to monitor and curtail this illegal trade.

5.3.2 Overview of ivory trade in Asia

The data shows that opportunistic poaching and some degree of unregulated trade in ivory is present (varying in scale) within most range States. While ivory was moved by land, sea, and air across range State borders, the bulk of the movement was by sea and air. China and Thailand had the largest unregulated ivory markets making them key

global players. These were followed by Myanmar and Vietnam. The bulk of the illegal ivory consisted of African ivory but even the low levels of Asian ivory present in the trade are a problem given the precarious status of Asian elephant populations.

The law enforcement reporting ratio (ratio of seizure within and outside the country) is a good indicator of a country's enforcement effort; for South Asia it was 61.5% and for Southeast Asia it was 10.4%. However, China had a reporting rate of 26.5%. The most heavily implicated countries (in Asia) based on law enforcement effort scores were China and Thailand. India has moved to actively suppress the illegal trade and China is beginning to follow suit. Similar actions in Thailand, Myanmar, and Vietnam were less apparent. Singapore is a major trans-shipment point but Malaysia needs to be vigilant, because ivory merchants may move to Malaysia if Singapore tightens law enforcement.

In general, law enforcement needs to be improved across most range States to curtail unregulated markets. With the exception of India and China, few ivory seizures occur or are reported to ETIS from either South or Southeast Asia. Bhutan, although not a source or destination for ivory, was active as a range State and kept ETIS informed about the status. Ineffective legislation, poor implementation of CITES, lack of political will, and corruption are the main obstacles towards improving the situation in most range States. Robust and effective ivory stock management is also needed in most range States.

5.3.3 Problem Synthesis

5.3.3.1 State

Most populations of Asian elephants are at considerable risk and probably are in a state of serious decline.

5.3.3.2 Pressure

Illegal or unregulated domestic and international trade in ivory is a major contributing factor to this state. Overall, Asia is believed to be the principle consumer of illegal ivory in trade today.

5.3.3.3 Response

- Review and address policy and legislation gaps
- Improve regulation of domestic ivory markets
- Build effective law enforcement capacity and strategies
- Meet international obligations (CITES)
- Strengthen ivory stock controls

5.3.4 The need to improve regulation of domestic markets

Under Resolution 10.10 (Rev. CoP12) CITES requires each country to:

- Register or license all importers, manufacturers, wholesalers and retailers dealing in raw, semi-worked, and worked ivory products;
- Have effective recording and inspection procedures;
- Have compulsory trade controls over raw ivory;
- Have effective reporting and enforcement system for worked ivory.

There is also the need to strengthen stockpile controls through measuring, marking, and registration of all stocks and these activities should be supported by effective audits and security. The need to upgrade law enforcement capacity and strategy and the need to network between different agencies (law, wildlife authorities, customs, police, NGOs, ports, CITES secretariat, etc.) is also very important. It is also important to report seizures to ETIS to allow centralized data collection and analysis through an efficient and standardized format. Other mechanisms that could help with controlling/curbing ivory trade are better public awareness and additional research.

5.3.5 Questions and discussions on ETIS

- Thailand: Claimed that the trade seen in Thailand was not illegal and that 20% of the finished products that were on sale were fakes made of bones (based on a student's report). Furthermore, the Thai representatives claimed that the genuine ivory products that were on sale were made from ivory sourced legally from captive elephants.
Mr. Milliken (ETIS): If there was a system where monitoring and registration of the production of captive elephant ivory was in place, we could easily confirm the legal status of the ivory used in the trade.
- Nepal: Why are we collecting seized specimens (ivory)? Why not destroy the specimens?
Mr. Milliken: That is a national level decision and needs to be taken by individual countries.
Dr. Dublin: As techniques improve, to understand the dynamics, the stockpiles will help provide new information.
- China: What about the Japanese market?
Mr. Milliken: Ivory verification in Japan could not be concluded successfully because there were some issues that Japan was still working on. Seizures from Singapore did have information that it was going to Japan but there was some confusion, i.e. tampering with documents and the shipment indicated that it may have been going to China instead.
- Malaysia: We would like to know more about the trade dynamics in Singapore.
Mr. Milliken: Singapore is beginning to screen cargo more closely and as a result trans-shipment pressures could shift to Malaysia as a transit point.
Dr. Dublin: Commented that illegal killing and trade need to be viewed as two separate but inter-linked systems.

5.4 PRESENTATIONS BY RANGE STATES: ON ETIS

5.4.1 Thailand: “ETIS: Thailand a case study”

Presentation by Dr. Mattana Srikrachangand and Dr. Sawai Wanghongsa, from the National Park, Wildlife and Plant Conservation Department, Ministry of Natural Resources and Environment.

Thailand has a long tradition of using captive elephants, but the number of captive elephants has declined from over 14,000 in 1940 to 3074 in 2005. All captive elephants above the age of 8 years in Thailand have been registered; animals below that age are not required to be registered. Elephants are checked (for microchip/registration) at check-points to confirm if they are registered. The current male to female sex ratio for captive elephants is 1:2.5 and the ratio of tusked males to males without tusks is 4:1. The bulk of the population (53%) is composed of animals between 31-60 years of age and animals between 11-30 years of age constitute another 28% of the captive population. Surin Province has the highest number of captive elephants and the population here grew from approximately 100 animals in 1992 to over a 1000 animals in 2004. This growth was driven by the use of elephants for tourism and also for collecting money from the public who pay to feed elephants.

The large captive population of elephants produces increasing volumes of ivory and on average approximately 300 to 400 kg of ivory is produced from the captive population. Owners cut the tusks as short as possible because they fear that their elephants will be stolen. Tusks are cut every 2 to 3 years after an animal reaches the age of 15 years. Ivory that is cut from captive elephants is not (and need not be) registered with the government. In Thailand, the current registered ivory stock consists of 16,127 whole tusks and 9,519 pieces of cut ivory. Of this total, the government owns only 488 whole tusks and no cut pieces.

This huge volume of registered ivory and the steady flow of fresh ivory from captive populations cause problems for the government to monitor and regulate the trade, especially as the laws allow trade without registration in ivory sourced from captive elephants. Lack of information or limited information on ivory trade, on commercial ivory stocks, and the presence of over 200 ivory carvers in the country make management of ivory trade difficult.

There has been a declining trend in the mortality of wild elephants in Thailand and records show that the reported deaths have declined from 90+ in 1975-79 to a little over 50 in 1997-2001. A total of 29 males were poached for ivory between 1992 and 2002.

During the period 2000 – 2004, a total of 69 elephants were exported from Thailand to other countries (Japan and China being the main recipient countries). Of these 9 were exported as royal gifts to other countries.

5.4.1.1 Draft Action Plan for captive trade control in Thailand

Thailand proposed an action plan to address the problem of trade in illegal ivory through the following measures:

Short-term measures

- Review and use existing laws (The commercial Regulation Act B.E. 2499 {1952})
- Registration of all ivory traders and manufacturers
- Campaign to increase public awareness at the national level so that tourists are made aware that trade in ivory is only for internal consumption
- Establish a database to monitor and investigate all internal movements of ivory

Long-term measures

- Amend ‘The Wild Animal Preservation and Protection Act B.E. 2535 (1992)’
- Amend ‘The Draught Animal Act, B.E. 2535 (1992)’

5.4.2 Questions and discussions on the presentation by Thailand (ETIS)

- Mr. Milliken: The photo that was shown looked similar to African Elephant tusks but you indicate that they are Asian Elephant tusks.
Dr. Mattana: Those are Asian elephant tusks.
- Mr. Milliken: Captive elephant tusks are cut but why are they not registered?
Dr. Mattana: According to Thai tradition, owners can keep ivory from captive elephants and do what they want with it.
- Nepal: Are the (present captive) elephants from the wild? How many generations have they been in captivity if they are not wild caught?
Dr. Mattana: Historically they were taken from the wild for the army or for use as working animals; the present population consists of descendents of that stock.
- Mr. Desai: Are there any reported cases of live elephants traded across the border?
Dr. Mattana: There are not many reports, probably one to the Lao PDR about 5 years ago. In Thailand, once the elephant is registered, owners can do whatever they want to do (according to national legislation) as it is the equivalent to cattle.

5.4.3 Briefing by Mr. Milliken: CITES (CoP13) meeting

Significant attention was paid to domestic ivory markets at the Thirteenth Meeting of the Conference of the Parties to CITES (CoP13) in October 2004. Of particular note was the adoption of an action plan for the control of trade in African elephant ivory. This plan requires all African range states to prohibit unregulated domestic sale of ivory; to instruct all law enforcement and border control agencies to act to stop illegal trade across international borders; and to engage in public awareness campaigns to publicize these prohibitions. The action plan also called on the CITES Secretariat ‘to monitor all domestic ivory markets outside Africa to ensure internal controls are adequate to comply

with the relevant provisions on trade in elephant specimens. Priority should be given to China, Japan and Thailand'. A full copy of the action plan endorsed by the African Elephant Range States Dialogue is available at <http://www.cites.org/eng/cop/13/docs/E13-29-1A.pdf>. Countries which fail to address their unregulated domestic ivory markets face possible sanctions under CITES, including suspension of all wildlife trade options.

5.4.4 China: Ivory trade in China.

Presentation by Mr. Wan Ziming, Head, Division of Enforcement and Training, CITES Management Authority of China.

China has a legal international trade in wildlife products worth over US\$ 600 million per year. In addition, there is a lot of illegal trade and thousands of cases are detected every year with wildlife products coming from South and Southeast Asia, and from Africa.

China has a wild elephant population of 200-250 elephants and a captive population of 100 elephants. Elephants are protected as a Category 1 Wildlife species under special protection from the State and they cannot be killed or captured. Sale, transport, purchase, import and export are all subject to approval of the State Forestry Administration (SFA). Captive breeding is also subject to approval and certification by the SFA. The African species too enjoys the same protection as the Asian species.

China's elephant conservation strategy involves establishing National Reserves (3 reserves, covering an area of 3124 km², have been established), active protection of these reserves by patrolling, monitoring the elephant population and its habitat, and HEC mitigation. The last has been attempted through resettlement of villages away from elephant habitat, compensation for crop losses, provision of electric fences, elephant proof trenches and walls, habitat enrichment, and development of cooperative protection mechanisms with local communities.

5.4.4.1 Illegal ivory import into China

Nearly 400 cases and at least 30 tonnes of ivory have been seized in the past 10 years. Customs has detected 139 cases, arrested 155 suspects and seized nearly 4 tonnes of ivory since 1999. Similarly Forest Police have detected 36 elephant-related cases, arrested 61 suspects, confiscated 7 elephants, 11,576 kg of elephant hide, 83 tusks, and 1445 kg of worked and raw ivory. The bulk (99%) of these seizures, are from Africa. There have been no significant ivory seizures after 2003.

The following measures are being taken by China to fight ivory smuggling:

- Supreme Peoples Court adopts two judicial interpretations on smuggling cases, which results in smuggling being treated as two separate crimes (smuggling crime and wildlife crime) with punishment imposed for both.

- Establishment of an official value standard for the ivory seized by the government
- Enforce strict punishment of suspects by the enforcement agencies and courts
- Properly dispose the confiscated ivory

Punishment for elephant- related crimes is very severe and smuggling of elephants or smuggling of ivory worth RMB 200,000 or more can be punishable by life imprisonment or even death. A large number of tourists, traders and smugglers possessing illegal ivory have been punished. Disposal of seized ivory is through auctions and there are strict standards set for such disposals.

China has been working with ETIS by translating ETIS training material and providing data on all elephant related cases to the CITES Secretariat and to TRAFFIC. China has also been working with the MIKE programme by translating MIKE training manuals into Chinese and by initiating MIKE data collection at the selected MIKE site since November 2005.

5.4.4.2 Measures taken by China to control its domestic ivory market

- Investigate the domestic ivory stockpile
- Register and designate all ivory manufacturers and dealers
- Introduced a registration system where the stockpiles of raw and processed ivory held by all designated manufacturers and dealers are registered and marked by the SFA which issues a certificate and maintains a database on all stocks; SFA also monitors the consumption and sale of registered ivory. Routine inspections are conducted by the local forestry departments. Any failure to follow the regulations results in a cancellation of the permit to deal in ivory
- Only registered and marked ivory is allowed to enter the domestic market. The system uses a certificate which all finished products are required to have; this certificate gives details of the product and a unique registration number that allows the buyer to verify the product through a website. In case of items that are over 50 g, a photograph of the actual product is fixed to the certificate. There is a warning which states that it is illegal to take the item out of China.

These above control measures have been accepted by the CITES Secretariat after a process of verification in the early part of 2005.

5.4.4.3 Public awareness campaigns

- Distribution of CITES leaflets and advertising of CITES regulations at international airports, train stations, and border passes.
- Publicize almost all the ivory seizures in the media
- Informing the public about the penalties for offenders
- Issuing press releases regarding the decisions adopted at CITES CoPs

- Requesting the embassies of African elephant range States in Beijing to show our CITES leaflets in their visa sections
- Contacts with internet site owners to stop the illegal auction of ivory on the internet

5.4.4.4 Workshop and training courses

- A CITES enforcement workshop is held by CNMA each year;
- A CITES training course for Customs officers is organized by CNMA & State Customs General Administration at national level each year;
- 4,000-5,000 traders, wildlife, customs & police officers are trained by 22 branch offices of CNMA at the provincial level each year.

5.4.5 Key issues highlighted

- HEC is one the major cause of illegal killing
- Ivory trade is continuing and the scale of the problem is reasonably well known
- Asia is a major trading place for African elephant ivory
- Progress has been made in several countries but CITES decisions have not been fully implemented across the Asian elephant range States
- With the exception of a couple of countries, reporting of ivory and other elephant product seizure cases to ETIS is generally poor throughout the two sub-regions
- Cross-sectoral linkages between wildlife/CITES authorities and other law enforcement agencies is generally very weak, inhibiting effective control of ivory trade and the reporting of ivory seizures to ETIS
- Registration of captive elephants is necessary to facilitate the monitoring of the illegal ivory trade and illegal trade in live elephants

5.4.6 Recommendations

- **Range States need to register and manage stockpiles of raw ivory**
- **Range States need to improve law enforcement and develop capacity to curtail the domestic and international flow of ivory**
- **Range States need to complete the registration of captive elephants**

6 MANAGING CAPTIVE ASIAN ELEPHANTS

Two presentations were made, one by Mr. Simon Hedges and the other by Mr. Herry Djoko Susilo (Indonesia).

6.1 ASIAN ELEPHANTS IN CAPTIVITY: STATUS, NEEDS AND VALUES

Presentation by Mr. Simon Hedges to set the context

Captive Asian elephants have become an important issue that managers and conservationists need to consider. This is not only because of the number of elephants in captivity but also because of their potential value for conservation and the threat that illegal captures could pose to wild elephant populations.

There are an estimated 16,365 captive elephants within the range States, while non-range States have fewer than 2000. North America and Australia have less than a 1000 captive Asian elephants and Europe has an estimated 296 (2003 data).

The need to register all captive elephants was stressed as it would facilitate monitoring and management of the captive elephant populations and help stop illegal captures and the trade in wild elephants. It will also help the range States and others monitor and regulate the domestic trade in elephant ivory and facilitate better management and veterinary care for the captive population.

6.1.1 Practical considerations with respect to registration

It was noted that a registration system should incorporate the following:

- Use unique microchip implants together with unique permanent external visible mark (tattoos). These external marks facilitate easy identification of elephants and overcome the problem of lost/malfunctioning microchips;
- Use a standard database that can be readily accessed and analyzed (both within and between range States);
- Involve training in implant techniques and database management and analysis;

It was noted that funding was a constraint in registering elephants and in establishing a database, but it is clear that these issues need to be addressed as the costs involved are not too high and the benefits are many.

6.1.2 The role of captive elephants

The role of captive elephants has been changing over time, but while their use has diminished they still play a functional role in most parts of their range. A number of roles were discussed in the context of conservation and elephant management. These were:

- None;
- Research (testing of DNA-based survey methods, studies of defecation rates, etc.);
- Ecotourism, patrolling of PAs, HEC mitigation work, etc.;
- As a source of animals for reintroduction.

The need to give serious thought to the use of captive elephants, especially in the long-term context was highlighted.

6.2 PRESENTATION BY RANGE STATES – CAPTIVE ELEPHANTS

6.2.1 Indonesia: “Captive elephant management issues in Indonesia”

Presentation by Mr. Herry Djoko Susilo, Head of Directorate of Species and Genetic Conservation

Indonesia has been capturing elephants as a HEC mitigation strategy since the early 1980s and currently has a large number (473) of captive elephants. There are 310 captive elephants in the ‘Elephant Conservation Centers’ (ECCs) that were established to train and manage elephants. In addition, there are 173 elephants in various zoos, safari parks, and other recreation areas.

6.2.1.1 *The major challenge and needs in Indonesia*

- Prevent illegal capture of elephants and trade in such animals
- Register captive elephants and establish a database that will allow effective monitoring and management of captive elephants
- Decide how to use the existing captive elephant population

Indonesia has already started registering its captive elephants and the process of establishing a database has also started. The registration system is based on both the use of microchips and photographic/physical details of the elephants. Tagging using microchips has been done for 174 (36%) of the elephants and the remaining elephants will be included in the scheme in future. A body condition index assessment has been completed for all elephants in the ECCs and the data included in the database. The

database also records the locations of all captive elephants in Indonesia. (Examples of the database were shown.)

6.2.1.2 Role of captive elephants in Indonesia

Captive elephants are currently being used for the following activities:

- For patrolling PAs and other forest blocks;
- For conservation education (mainly targeting rural communities and those who face HEC);
- For HEC mitigation work (elephant drives);
- The ECCs could also act as breeding centers. The present problem is that there is no planned breeding activities and only a few calves have been born from the mating of captive females with wild males;
- Another option that is being debated is the inter-country loans of elephants. This however would only be done after all the local needs for captive elephants are met and there is no more room in the ECCs for more elephants. The following aspects have been considered for the National Protocol for these loans:
 - Agreement needs to be on a Government to Government or Government to NGOs/Private bodies basis
 - Minimum loan duration of 20 years
 - A sex ratio of 1 male : 3 females for the loaned animals and age classes of animals to depend on the social structure of the group at the original site
 - Take into consideration elephant welfare: suitable facilities and husbandry practices need to be available in the receiving country
 - Benefits of the loan should be for both the captive and the wild population, and should be site specific
 - The ownership status of any offspring born should be clearly defined
 - Clear agreement on loan fee
 - Institutional arrangement and management of loan fee
 - Site assessment
 - Clear agreement on dispute settlement

6.2.2 Questions and discussion on Indonesia's talk:

- Mr. Hedges: How many elephants would the Chinese zoos be willing to take? Would the solution that China has to offer be able to address the problem?
China: There are numerous zoos which want elephants, there is a big demand for elephants, but I cannot give specific numbers
- Dr. Nagendran (USFWS) suggested that where captive elephant populations were breeding and were it was not desirable to have local population growth, it would be useful to test contraception techniques so that these could then be applied at some sites in the wild to address problems of local over-abundance.

6.3 STATUS OF CAPTIVE ELEPHANTS

The range states provided information on the number of captive elephants, the proportion registered using microchips and the number owned privately. The details are given in [Annex 4](#). A total of 12,806 elephants were reported and 75% (9,545) of these were privately owned. Some countries had achieved nearly 100 % registration of their captive population using microchips while many others had completed only partial registration or had not yet initiated the registration process. The reasons cited for not having started the registration process or for not having made much progress included lack of technical capacity, lack of funds, absence of laws that required compulsory registration, lack of equipment, etc.

6.4 KEY ISSUES HIGHLIGHTED

- Registration of captive elephants is necessary to facilitate monitoring of the captive population as well as the ivory trade
- Captive elephants have a range of uses in Asia and such uses will continue in future. Demand for captive elephants will persist, but with an increasing trend in some countries and a declining trend in others.
- Sustainability of captive elephants in range States: there is a clear need to address long-term requirements and consider limited breeding rates and inadequate resources, as well as an increasing demand in some states

6.5 RECOMMENDATIONS

- **There is a clear need to expedite the registration of captive elephants to facilitate monitoring of illegal ivory trade;**
- **There is a clear need for standardization of microchip implant based registration systems across all range States to facilitate the detection of cross border movements of captive elephants;**
- **Range States need to consider their needs for captive elephants in future through well planned captive breeding strategies;**
- **There is a clear need to establish good management and husbandry practices.**

INTERACTIVE SESSION 3: USE OF CAPTIVE ELEPHANTS

The Chair, Dr. Dublin initiated an exercise to identify uses of captive elephants in different range countries.

Captive elephants in the range States were used for eco-tourism, for exhibition and public awareness, for providing labour, for conservation and management uses, and for religious and cultural purposes.

1. Eco-tourism: With the exception of Vietnam and Bhutan all other range countries used captive elephants for supporting tourism. These captive uses were not confined to PAs but included uses in safari parks, cultural sites, and recreational areas.
2. Exhibition/public awareness and education: While most countries have elephants in zoos, some pointed to their use in non-zoo (exhibition only) situations where they also acted as a means to attract tourists. Sri Lanka gave the example of its elephant orphanage at Pinnawala which attracted a lot of tourists. Their use in other situations like zoo-safari parks (Indonesia), zoo breeding centers (China), and in zoos and circuses (Bangladesh) were also noted.
3. For providing labour: Logging remained one of the main tasks where elephants still provided labour (Myanmar, Lao PDR, Indonesia, etc.). They are also still used for transport (Cambodia, Myanmar) and for plowing fields (Myanmar).
4. For use in conservation/management: Several countries (Indonesia, India, Nepal, Bhutan, Bangladesh, and Malaysia) use elephants in PA management. The task primarily focuses on patrolling activities but also includes HEC mitigation work.
5. Religious/cultural uses: Cambodia and Thailand still used captive elephants as a part of their culture and felt that it was important for preserving the cultural heritage of the country. Lao PDR, India, and Sri Lanka used elephants for ceremonial and religious functions and for pageantry.

The range States then engaged in a second exercise assessing their long-term needs for captive elephants and their strategy to address those long-term needs

The Chair, Dr. Dublin initiated the discussions by asking the ranges states “How do range states see the future in terms of their need to use elephants 20 or 50 years from now and how do they see themselves addressing the need for captive elephants over that time scale?”

The range States differed in their long-term needs and also their strategies to address those long-term needs. While some range States had clear ideas about the long-term needs, others were not so clear. The positions of different range States are listed below

- Nepal had made an assessment of their long-term requirements of captive elephants and had clear management goals and strategies to meet those needs. Nepal felt that they would need a minimum of 100 additional working elephants to meet the

patrolling and tourism needs of the National Park system. They had already set aside 25 elephants for breeding purposes and planned to add to that number so that they would have a sustainable breeding population that addresses the needs for captive elephants in the future.

- India felt that the needs for patrolling would remain same and as such the demand for elephants would remain constant. India felt that there would be a need for at least 200 elephants for eco-tourism in the next 10 years. In addition, they felt that the use of elephants in religious functions was likely to continue and that private owners would not be able to meet these demands in future and as such they may need extra animals. They had appointed a taskforce to look at all aspects of the captive elephant situation in India and the report had suggested plans for sustaining the necessary captive population to address all future needs.
- Bhutan (Government of Bhutan) had only four elephants in captivity currently and they would use these elephants as long as they are available. Beyond that they did not feel there would be a need for captive elephants and as such had no plans for sustaining the captive population.
- Bangladesh has not been using elephants for patrolling but has now acquired privately owned elephants that were used for logging (and have been handed-over to the government). They may use these elephants for patrolling if they get funds from the government. However, they see no demand for patrolling in the future. Bangladesh saw an increasing demand for elephants from zoos but also saw a declining trend in the demand from circuses so they felt that it would balance out eventually. Elephants are used only in safari parks for riding and not for eco-tourism in the real sense. They felt that since these elephants were mainly privately owned, only a demand for elephants would stimulate better management and that breeding would be primarily driven by supply and demand.
- Indonesia thought that their long-term needs would be met by breeding in captivity; they also saw a declining trend in the use of elephants for patrolling as more and more forest areas become accessible in the future.
- Malaysia currently maintains two elephants for the translocation programme and a few for educational purposes. They felt that, in future, they would need a few more elephants for translocation-related purposes and educational work and that this demand would be met through capture of problem elephants.
- Myanmar saw a continued need for elephants in their timber industry (due to steep terrain and logging practices) but they felt that the use of elephants for farming would decline in future as access to remote areas improved and farm machinery become available. They felt that their future needs would be addressed through the breeding programme that has already been established.
- Lao PDR felt that they would have long-term demand for captive elephants for festivals and cultural uses. Their use in eco-tourism was also increasing. They planned to start a breeding program by moving some captive females to National Protected Areas so that they could mate with wild bulls.
- Cambodia felt that there would be long-term demand for captive elephants in their country. They also had plans to reduce mechanization at the Angkor Wat site and promote the use of bicycles and elephants. In addition, they felt that they needed at least 100-150 additional elephants for eco-tourism in the country's National Parks.

However, the current captive population was likely to die out in the near future as local communities considered it a taboo to breed elephants in captivity. They were trying to get the government to start a breeding program but were not sure if it would succeed as there was no culture of captive breeding in the country. While the Forestry Administration was trying to get these elephants from private owners, there was no clear plan or strategy as to how both short-term and long-term demands were going to be met. Capture of wild elephants is prohibited and traditional elephant training/handling skills are also being lost.

- Vietnam had 27 elephants in zoos and another 127 were involved in eco-tourism work. The government has a need for additional elephants in conservation areas (for departmental use) and they felt that they could divert some elephants from the eco-tourism to this task. They currently did not have a plan to address long-term demands.
- Sri Lanka felt that they had demonstrated that the use of captive elephants in eco-tourism was beneficial for the conservation of wild elephants. However, they stated that they had no planned captive breeding program to meet future demands.
- Thailand had established measures for the management of captive elephants (for use in ecotourism and for cultural purposes) and felt that captive breeding would address long-term needs.
- Dr. Dublin commented that the Asian Elephant Specialist Group would be able to help with the:
 - Standardization of microchip-and-database registration systems across the range States;
 - Population viability assessments (for captive elephants).

7 THE SSC ACTION PLANNING PROCESS

Dr. Holly Dublin gave a presentation on the SSC Action Planning process by identifying the shortcomings of the earlier process and highlighting how the new process would improve on the old system

Over the years several lessons have been learnt in the action planning process and some of the shortcomings identified and they need to be addressed:

- Action Plans have become compilations of all biological knowledge rather than action plans *per se*;
- There is a need for shifting demand from purely biological to more applied approaches;
- The actions that were recommended often focused on further research needs;
- There were incomplete consultation processes;
- Often there was no involvement from implementing agencies;
- The time taken to complete the action plans was often too long.

However, despite these shortcomings, it was found that the combination of a Species Action Plan, an active Specialist Group, and the IUCN and SSC 'seal of approval' were a powerful force for conservation. The way forward is to improve the action planning process and to this end a new process is underway involving:

- Peer review and compilation of state-of-knowledge reports on species status and distribution;
- Threat/problem analysis and strategic plan development with broader representation of stakeholders and implementers;
- Development of action plans at relevant levels for ensuring implementation.

As an example, the role IUCN played in convening and facilitating African Elephant and Lion conservation strategies was highlighted. During the formulation of these strategies governments, NGOs, and the African Elephant and Cat Specialist Groups worked together through the regional and country offices to develop sub-regional African Elephant and Lion conservation strategies. The process and the current status of the sub-regional strategic planning for elephants were discussed. The experiences gained show:

- Major differences between the sub-regions and the countries;
- There is a tendency to subordinate the concerns of elephant conservation;
- It is important to get formal acceptance of conservation plans at the Ministerial level;
- Major new funding sources have been found – internal and external.

Some of the successes have been:

- West Africa – a multi-national MOU and Action Plan has been adopted at the Ministerial level by 12 of 13 Range States;
- Central Africa – the strategy document has been forwarded to the sub-regional economic instrument, COMIFAC, for further consideration by the existing Heads-of-State agreement for all 7 range States;
- Southern Africa – In process towards adoption by the appropriate economic body, the SADC.

Sub-regional strategies have also been very useful in addressing cross border issues and can tie-in with national strategies and action plans and help global and national policy fora address wider biodiversity conservation issues.

INTERACTIVE SESSION 4: FINAL DISCUSSION SESSION

This final discussion session concentrated on the following questions: “What do we want to do next? What is our bigger vision?”

The feedback from the range States was grouped into 1) global, regional, and sub-regional suggestions; 2) bilateral cooperation; 3) national level issues; 4) identification of mechanistic needs; 5) the need for IUCN/SSC support; 6) the need for focal points (representatives) in each range State; and 7) funding.

1. At the global and sub-regional level, the feedback was primarily about the need to have regular meetings of the Asian elephant range States to carry forward the dialogue initiated in this meeting. The formulation of regional and sub-regional strategic plans was suggested and the need to involve conservation biologists in the process was also suggested. The need for strengthening communication and cooperation among neighboring countries to address issues related to cross border populations was stressed. It was also suggested that an attempt be made to set up a HEC working group within the ASEAN Forestry sector.
2. At the bilateral level, Vietnam suggested that it would initiate a dialogue with Cambodia to address the conservation needs of elephants in the tri-border area (Vietnam, Cambodia, and Lao PDR). A more general suggestion was for establishing bilateral mechanisms to address cross border smuggling of ivory and other products, and live elephants (i.e. coordinated law enforcement actions).
3. At the national level, the range States indicated that development (or revision in some cases) of a national policy and action plan for the conservation of elephants was important. The need to carry out baseline surveys at the national level to provide information leading towards development of policies was noted. The need for developing a national policy and action plan for captive elephants was also indicated. The importance of sharing the information gathered at the meeting with other relevant government departments at the national level was stressed. Among the more specific actions suggested were the need to study the genetics of the Sumatran elephant, the need to maintain viable populations in PAs, and the need to manage elephant habitat in order to support viable populations.
4. Specific mechanistic needs suggested were:
 - A common database for elephant range States in Asia similar to the African Elephant Database;
 - Information sharing at the local, national, and international levels.
 - Registration of captive elephants using microchips and research based utilization of captive elephants;
 - Population and habitat viability analysis;

- Need for guidance and assistance in planning and implementation of national action plans.
5. Specific requests to IUCN/ SSC:
 - IUCN country officers to play an important role in bringing all stakeholders towards conservation of targeted species;
 - IUCN/SSC to facilitate the development of regional action plans for ASEAN up to 2020.
 6. The value of having focal points (representatives) in each of the range States at the ministerial level or departmental level was stressed. The representatives for each country were recommended and are listed in [Annex 3](#).
 7. With regard to funding there was general recognition of the need to seek more donors for Asian elephant conservation programmes.

AsESG ASSISTANCE TO RANGE STATES

The co-chairs of the AsESG suggested that the group could assist with the actions suggested above, specifically:

- Initiate, host, compile, and/or coordinate development of an Asian Elephant Database covering:
 - Distribution and status of populations (including captives);
 - Habitat data;
 - HEC (linking to or using the MIKE data as appropriate).
- Assist with strategic planning:
 - Organize and facilitate meetings and assist in sourcing funds for the meetings.
 - Coordinate the action planning process:
 - Ensure that it links to strategic planning process;
 - Use the new multi-stage IUCN process discussed at the meeting;
 - Ensure the involvement of managers or policy people from the range States.
- Help with the development of standard data collection protocols:
 - For population survey and monitoring methods the AsESG would ensure compatibility with the CITES MIKE programme;
 - HEC data collection was identified as a clear case where standardization was needed.
- Standardizing HEC mitigation protocols and approaches.
- Capacity building:
 - Assist with study tours and information sharing; such study tours could cover Managed Elephant Ranges, HEC mitigation, law enforcement, etc.
- Captive populations:
 - Example of tools available through the SSC include:

- Population and habitat viability analysis (PHVA) and population viability analysis (PVA) for captive populations. Such analyses could lead to appropriate breeding strategies for the range States' captive elephants.
- Enabling information sharing and capacity building for registration schemes (e.g. for countries that have not completed micro-chip implantation).

THE NEED FOR A FOCAL PERSON TO FACILITATE BILATERAL COMMUNICATION

There was a discussion regarding the need for having a ministerial level focal person to facilitate bilateral communication, following a point raised by Dr. Nagendran of the USFWS. She pointed out to the fact that action could be initiated much more easily if someone senior in the ministry is the focal person. The discussion focused on the pros and cons of such a focal point. India suggested that each range State has a different organizational and functional set up and as such it should be left to the range States to decide on the best approach for their country. The delegates identified a focal person for each country and the list of focal persons along with the contact details is given in [Annex 3](#).

ACTIONS PROPOSED BY RANGE STATES

The discussion then shifted to address the question, “What can the range States contribute and what are they going to do?”

This last session focused on what the range States planned to do with regard to elephant conservation. The proposed actions were largely focused at the national and bilateral levels. There were offers to cooperate and work at the regional and global levels. Several range States offered technical assistance to other range States. Data and information sharing was also recognized as an important part of the cooperative process. China wanted to work with other range States to curb ivory smuggling. The actions suggested are summarized below:

Nepal:

1. Initiate preparation of a national action plan for elephants;
2. Can provide technical assistance on captive breeding to other range States;
3. Can provide technical assistance for micro-chip implants (for elephant registration) and database management.

Malaysia:

1. Initiate awareness education on elephants in Malaysia;
2. Malaysia will support any programme that benefits elephants in the country;
3. Establish and enhance bilateral ties with neighboring countries;
4. Initiate population surveys for elephants to identify the viability of populations;
5. Engage in data sharing at the sub-regional level.

Myanmar:

1. Prepare and implement a national action plan with relevant technical assistance and support;
2. Support the actions of range States at the sub-regional level.

Bhutan:

1. Information sharing on national parks;
2. Monitoring programme to be initiated;
3. Initiate surveys to collect information on the status of elephants.

Indonesia:

1. Develop action plans for captive elephants;
2. Can provide technical assistance to others on microchip implants and database management;
3. Prepare a draft national action plan.

China:

1. Register captive elephant population;
2. Implement national strategy for Asian elephant conservation;
3. Strengthen law enforcement cooperation with other range States to stop smuggling of ivory;
4. Discuss possibility of 'borrowing' captive elephants from other countries to meet local demand for them.

India:

1. Can provide assistance to other range States in developing national action plans;
2. Experience sharing on the management of wild and captive populations.

Lao PDR

1. Develop elephant conservation programme for the long-term conservation of elephants;
2. Survey and monitor elephant populations.

Vietnam

1. Support survey of cross border elephant populations in the Lao-Cambodia-Vietnam tri-country area.

Sri Lanka

1. Formulation of a national policy for elephant conservation;
2. Multi-stake holder consultation to finalize draft action plan.

Bangladesh:

1. Harness the knowledge of private owners of captive elephants for captive elephant management;
2. Initiate bilateral dialogue with India and Myanmar on cross border elephant populations.

Thailand

1. National elephant committee to be set up for conservation and management of wild and captive elephants;
2. Create an independent committee on cross border issues.

Cambodia:

1. Pilot testing of the CITES MIKE dung survey techniques;
2. Work closely with Thailand, Lao PDR, and Vietnam on cross border biodiversity conservation.

Range States also identified their needs as follows:

- Myanmar – technical assistance required for conservation planning.
- Bhutan – needs training on data analysis.

Key issues highlighted

- Value of strategic planning at the sub-regional and national level;
- Importance of involving the implementers in these strategic planning processes;
- The need for dedicated high-level focal points for elephants at the national level;
- Importance of integrating planning for elephants with other higher-level national policy and planning processes.

Recommendations

- **Regional and sub-regional level: Formulation of national, sub-regional, and regional strategic plans for elephant conservation. Involvement of conservation biologists to help develop sound management strategies. Regular meeting of Asian elephant Range States. Rational and sustainable utilization of captive elephants.**
- **Bilateral and multilateral: Establish bilateral mechanisms to address cross border elephant conservation issues (addressing conservation, poaching, trade, etc.).**
- **National level: Develop national policies and strategies for elephant conservation and captive elephant management. Initiate surveys to gather baseline data for conservation planning and monitoring. Improve information sharing with other relevant departments within government.**
- **Specific mechanisms and tools needed: A common standardized database for Asian elephants similar to the African Elephant Database. Information sharing at the cross-sectoral, national, and international levels. Registration of all captive elephants. Provide guidance and technical assistance for implementation of national action plans.**
- **Request to IUCN/SSC/AsESG to facilitate the development of sub-regional and national strategies and action plans and assist in identifying potential funding for this effort. IUCN country and regional offices to play an important role in bringing all stakeholders together to support this process.**

ANNEX 1: AGENDA

AGENDA FOR ASIAN ELEPHANT RANGE STATES MEETING, KUALA LUMPUR, MALAYSIA, 24–26 JANUARY 2006

Facilitator: Dr. Holly Dublin, Chair, IUCN Species Survival Commission

January 24th, morning session

1. Opening statements and introductory comments
2. Introductions and apologies
3. Overview of the objectives and procedures for the meeting
4. Adoption of the agenda
5. Setting the context: an overview of the status of the Asian Elephant and the threats to its conservation
6. Managing wild elephant populations
 - 6.1. Determining, monitoring, and securing information on status

January 24th, afternoon session

- 6.2. Habitat considerations – fragmentation and loss
- 6.3. Human–elephant conflict

January 25th, morning session

7. Illegal killing and trade
 - 7.1. Illegal Killing of Elephants
 - 7.1.1. An update on CITES MIKE
 - 7.1.2. The scale of the problem
 - 7.1.3. Skewed sex ratios due to selective removal of males
 - 7.1.4. Law enforcement and other approaches to reducing poaching
 - 7.2. Illegal Trade in Elephant products
 - 7.2.1. An overview and update on ETIS
 - 7.2.2. Regulation of internal ivory markets

January 25th, afternoon session

8. Managing captive Asian Elephants
 - 8.1. Overview of issue – setting the context
 - 8.2. Discussion on the need for registration

- 8.3. The role of captive Asian Elephants in elephant conservation
- 8.4. Inter-country loans
- 8.5. Agree on broad objectives for captive elephants

January 26th, morning session

9. National and sub-regional elephant conservation and management strategies

January 26th, afternoon session

10. Any other business
11. Adoption of draft meeting report, including recommendations
12. Concluding remarks
13. Close

ANNEX 2: LIST OF PARTICIPANTS

Asian Elephant Range State Meeting Delegates

Bangladesh

Mr. Monoj Kanti Roy
Conservator of Forests and National Officer CITES MIKE – Bangladesh,
Wildlife and Nature Conservation Circle, Forest Department, Bana Bhaban,
12, Gulshan Road, Mahakhali, Daka – 1212, Bangladesh
bforest@citechco.net monoj@bdcom.com

Mr. Badrul Anam Bhuiyan
Divisional Forest Officer
Chittagong South Forest Division
Bangladesh

Bhutan

Mr. Sonam Tshering
Divisional Forest Officer
Gedu Division
Bhutan

Ms. Nagdrel Lhamo
Assistant Director of Forests
Species Conservation Research and Monitoring Section
Nature Conservation Division
Department of Forest, Ministry of Agriculture
Thimphu, Bhutan
nagdrel@druknet.bt

Cambodia

Mr. Chheang Dany
Deputy Director of Wildlife Protection Office
Department of Forestry and Wildlife Research Institute
Ministry of Agriculture, Forestry and Fisheries
40 Preah Norodom Boulevard, Cambodia
wpo@forum.org.kh

Mr. Hort Sothea
Department of Forestry and Wildlife Research Institute
Ministry of Agriculture, Forestry and Fisheries
40 Preah Norodom Boulevard, Cambodia
wpo@forum.org.kh

China

Mr. Wan Zimeng
Head Law Enforcement and Training,
CITES Management Authority of China
18 Hepingli Dongjie, Beijing 100714, China
Ziming_wan@sohu.com

India

Dr. R.B. Lal
Inspector General of Forests,
Ministry of Environment and Forests, Government of India,
Room No. 106, B – Block, Paryavaran Bhawan, CGO Complex,
Lodhi Road, New Delhi – 110003, India
ravindra52@yahoo.com

Mr. P. Subramanian,
Regional Deputy Director (Wildlife),
Wildlife Southern Regional Office,
Ministry of Environment and Forests,
C-2A, Rajaji Bhavan, Besant Nagar, Chennai – 600 090, India
rdds@vsnl.com

Indonesia

Mr. Herry Djoko Susilo
Head of Directorate of Species and Genetic Conservation
Direktorat, Konservasi Keanekaragaman Hayati
Gd. Manggala Wanabakti
Block 7 Lt. 7 Jl, Jend. Gatot Subroto
Jakarta, Indonesia
herrysusilo@yahoo.com

Mr. Ade Kurnia Rauf
Head of Genetic and Species Conservation Division,
Conservation
Direktorat, Konservasi Keanekaragaman Hayati
Gd. Manggala Wanabakti
Block 7 Lt. 7 Jl, Jend. Gatot Subroto
Jakarta, Indonesia

Lao PDR

Mr. Chaynoy Sisomphane
National Coordinator for MIKE Programme,
Director General,
Department of Forestry,
Ministry of Agriculture and Forestry
PO Box 2932, Vientiane, Lao PDR
vsihar@yahoo.com

Mr. Oune Vilaysack
Field Staff
Nam Poui NBCA,
Sayaboury Province
Lao PDR

Malaysia

Mr. Dato Hj Musa bin Nordin
Director General,
Department of Wildlife and National Parks,
KM 10 Jalan Cheras,
50664 Kuala Lumpur, Malaysia
pakp@wildlife.gov.my

Mr. Abd. Rashid Samsudin
Deputy Director General,
Department of Wildlife and National Parks
KM 10 Jalan Cheras,
56100 Kuala Lumpur, Malaysia
Rashid@wildlife.gov.my

Ms Siti Hawa Yatim
Director of Research and Conservation,
Department of Wildlife and National Parks
KM 10 Jalan Cheras,
56100 Kuala Lumpur, Malaysia
siti@wildlife.gov.my

Myanmar

Mr. U Myint Sein
Staff Officer, Hlawga Park
Forest Department, Bayintnaung Road
West Gyogone, Insein Yangon
Myanmar
DG.FD@mptmail.net.mm nwcd-cas@mptmail.net.mm

Mr. U Tin Mya Soe
Range Officer/Park Warden
Forest Department, Bayintnaung Road
West Gyogone, Insein Yangon, Myanmar
DG.FD@mptmail.net.mm nwcd-cas@mptmail.net.mm

Nepal

Mr Shyam Bajimaya
Ecologist and National Officer
CITES MIKE – Nepal
Department of National Parks and Wildlife Conservation
Government of Nepal,
PO Box 860, Babar Mahal, Kathmandu, Nepal
sbajimaya@dnppwc.gov.np

Mr. Surya Bahadur Pandey
Assistant management Officer
Department of National Parks and Wildlife Conservation
Government of Nepal,
PO Box 860, Babar Mahal, Kathmandu, Nepal

Sri Lanka

Mr. D. Kariyawasan
Director General,
Department of Wildlife Conservation,
No. 18, Gregory's Road, Colombo – 7, Sri Lanka
director@dwlc.lk

Mr. S.R.B. Dissanayake
Deputy Director (Ecologist)
Department of Wildlife Conservation
No. 18, Gregory's Road, Colombo – 7, Sri Lanka
disa@dwlc.lk

Thailand

Dr Mattana Srikachang
National Park, Wildlife and Plant Conservation Department,
Ministry of Natural Resources and Environment
Paholyathin Rd., Jatujak, Bangkok 10900, Thailand
smattana@hotmail.com

Dr Sawai Wanghongsa
National Park, Wildlife and Plant Conservation Department,
Ministry of Natural Resources and Environment
Paholyathin Rd., Jatujak, Bangkok 10900, Thailand

Vietnam

Mr. Tran The Lien
Vice-Chief,
Nature Conservation Division,
Forest Protection Department,
Ministry of Agriculture and Rural Development
O. 2. Ngoc Ha Str., Hanoi, Vietnam
lientt.kl@mard.gov.vn

Mr. Tran Van Thanh
Vice Chief, Cat Tien National Park
Dong Nai Province of Vietnam
thanhppmudn@yahoo.com

ETIS

Mr. Tom Milliken
Director
Elephant Trade Information System
TRAFFIC East/Southern Africa, c/o WWF SARPO
PO Box CY 1409, Harare, Zimbabwe
milikken@wwfsarpo.org

IUCN

Dr. Holly Dublin
Chair, IUCN Species Survival Commission,
c/o South African National Biodiversity Institute
Private Bag X7, Claremont 7735, Cape Town, South Africa
holly.dublin@ssc.iucn.org

Mr. Ajay A. Desai
Co-Chair, IUCN SSC Asian Elephant Specialist Group
B.C. 84, Camp, Belgaum – 590001, India
ajayadesai.1@gmail.com

Mr. Simon Hedges
Co-Chair, IUCN SSC Asian Elephant Specialist Group
c/o 1 Kearstwick Cottages, Kearstwick,
Kirkby Lonsdale, Cumbria,
LA6 2EB, United Kingdom
simon.hedges@zen.co.uk

Dr. Jean-Christophe Vié
Deputy Coordinator, Species Programme
IUCN – The World Conservation Union,
Rue Mauvemey, 28
CH – 1196 Gland, Switzerland
jcv@hq.iucn.org

Dr. Channa Bambaradeniya
Coordinator – Regional Species Programme
Ecosystems and Livelihood Group 2
IUCN – Asia Regional Office
Colombo – 7, Sri Lanka
cnb@iucnsl.org

Mr. Alvin Lopez
IUCN
alvin@mekongwetlands.org

CITES MIKE

Mr. Nigel Hunter
Director
CITES MIKE Programme
PO Box 68200
Nairobi 00200, Kenya
nigelhunter@citesmike.org

Dr. Arun Venkataraman
South Asia Sub-regional Support Officer
CITES MIKE Programme South Asia
C – 589, Ground Floor, Defense Colony, New Delhi, India
arunvenkataraman@citesmike.org

Dr. David Lawson
South Asia Sub-regional Support Officer
CITES MIKE Programme Southeast Asia, c/o CITES Office
National Park, Wildlife and Plant Conservation Department,
Paholyathin Rd., Jatujak, Bangkok 10900, Thailand
davidlawson@citesmike.org

US Fish and Wildlife Service

Dr, Meenakshi Nagendran
Project Officer
Asian Elephant Conservation Fund
U.S. Fish and Wildlife Service
Division of International Conservation
4401 N. Fairfax Drive, ARLS730, USA
meenakshi_nagendran@fws.gov

Observers

China

Dr. Aster Li Zhang
Vice Professor, Life Science College
Beijing Normal University
azhang@ifaw.org

Malaysia

From: Department of Wildlife and National Parks

A. Razak Majid (Director)
Abd Kadir Hashim (Director)
Jamalun Nasir Ibrahim (Director)
Nasharuddin Othman (Assistant Director)
Mislihah Mohamed Basir (Director)
Pazil Abd Patah (Director)
Rahim Ahmad (Director)
Rozidan Mohd. Yasin (Director)
Salman Saaban (Senior Assistant Director)
Shabrina Mohd. Shariff (Director)
Zainuddin Ab. Shukar (Director)

ANNEX 3: FOCAL PERSONS

Bangladesh

Mr. Manoj Kanti Roy
Conservator of Forests
Wildlife and Nature Conservation Circle, Forest Department
Ban Bhaban, Mohakhali
Dhaka – 1212
Bangladesh
Phone: + 88 – 02 – 8813820 (Off.), 8918756 (Res)
Fax: + 88 – 02 – 9886887, 98816664
Email: cf-wnc@bforest.gov.bd, bforest@citechco.net

Bhutan

Director
Nature Conservation Division
Department of Forests, Ministry of Agriculture
Thimphu
Bhutan
Phone: + 975 – 2 – 325042
Fax: + 975 – 2 – 325475

Cambodia

Director General
Forestry Administration
40, Norodom Blvd.
Phnom Penh
Cambodia
Email: wpo@forum.org.kh

China

Dr. Aster Li Zhang
Vice Professor, Life Science College
Beijing Normal University
Phone: + 86 – 139 10717617
Email: azhang@ifaw.org

India

Inspector General of Forests and Director Project Elephant
Ministry of Environment, Government of India
Paryavaran Bhavan
CGO Complex
Lodi Road
New Delhi – 110003
Phone/Fax: + 91 – 11 – 24360957

Indonesia

Mr. Herry Djoko Susilo
Head of Directorate of Species and Genetic Conservation
Direktorat, Konservasi Keanekaragaman Hayati
Gd. Manggala Wanabakti
Blok 7 Lt. 7 Jl. Jend, Gatot Subroto,
Jakarta
Indonesia
Email: herrysusilo@yahoo.com

Lao PDR

Mr. Phetsamay Vongkhammounty
Director General
Department of Forestry
Ministry of Agriculture and Forestry
Vientiane
Lao PDR
Fax: (085) 21217483
Email: vsihar@yahoo.com

Malaysia

Mr Abd. Rashid Samsudin
Deputy Director General
Department of Wildlife Conservation and National Parks
KM. 10, Jalan Cheras, 561000 Kuala Lumpur
Malaysia
Phone: + 60 – 3 – 90752872/5/6/8/9
Fax: + 60 – 3 – 90752873
Email: Rashid@wildlife.gov.my

Myanmar

U Tun Nyo
Director
Nature and wildlife Conservation Division
Forest Department
West Gyogoma
Yangon
Myanmar
Phone: + 951 681920
Fax: + 951 681761
Email: nwcd-cas@mptmail.net.mm

Nepal

Director General
Department of National Parks and Wildlife Conservation
PO Box 860
Babar Mahal
Kathmandu
Nepal
Phone: + 977 – 1 – 220850 / 220912 / 227926
Fax: + 977 – 1 – 227675
Email; dnpwc@bdcin.wink.com.np

Sri Lanka

Director General
Department of Wildlife Conservation
No. 18 Gregory's Road.
Colombo – 7
Sri Lanka
Phone: + 94 – 11 – 2698086
Fax: + 94 – 11 – 2669781
Email: director@dwlc.lk

Thailand

For wild elephants

Director General of National Park, Wildlife Sanctuary and Plant Conservation (DNP),
61 Phaholyothin Road,
Chatuchak,
Bangkok 10900
Thailand
Phone: + 02-5614292-3 ext. 801, 802

For captive elephants

Director of Forests Industrial Organization (FIO)
76 Rajdamneon Nok Road
Pamparp
Bangkok 10100
Thailand
Phone: + 02-2813459

Vietnam

Mr. Ha Cong Tuan
Director
Forest Protection Department
No. 2 Ngoc Ha
Hanoi
Vietnam
Phone: + 84 – 47335689
Fax: + 84 – 47335685
Email: fpdvn@ha.vnn.vn; lientt.kl@mard.gov.vn

ANNEX 4: STATUS OF CAPTIVE ELEPHANTS

Country	Microchip implant/ registration	Constraints	Registered	Total numbers in captivity	Comments / ownership of animals
Bangladesh	No	Capacity		94	77 privately owned
Bhutan	No	Small number		4	All government owned
Cambodia	No			100	97 privately owned
China	No			100	20 Private owned
India	Yes		50%	3400	
Indonesia	Yes		36%	483	All government owned
Lao PDR	No	Capacity and funding		722	Registered but no microchips
Malaysia	Yes		50%	38	Working with resorts that have the elephants
Myanmar	No	No funding		3949	Registered
Nepal	Yes		42%	177	76 privately owned and 7 owned by NGOs
Sri Lanka	No			500	About 350 registered but no microchips; 430 privately owned
Thailand	Yes		100%	3074	95% privately owned
Viet Nam	No			165	138 privately owned
Grand total				12,806	

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