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WWF Asian Rhinoceros and Elephant Strategies (AREAS)

Workshop Report

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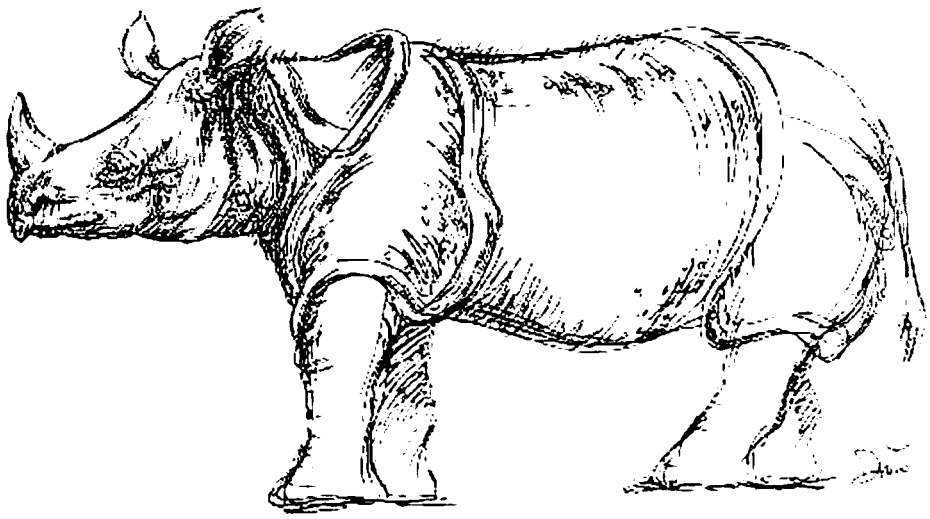

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The cover drawing of a Javan Rhinoceros was done by Nguyen Tien Dzung for the WWF Indochina Programme

List of Acronyms

APSC – Asia-Pacific Sub-Committee (WWF)
AESG – Asian Elephant Specialist Group
AsRSG – Asian Rhinoceros Specialist Group
AREAS – Asian Rhinoceros and Elephant Strategies (WWF)
ASEAN – Association of South East Asian Nations
CBD – Convention on Biodiversity
DAP – Draft Action Plan
DWNP – Department of Wildlife and National Parks (Malaysia)
EU – European Union
FFI – Fauna and Flora International
GTZ – German Agency for Technical Co-operation
GEF – Global Environment Facility
GIS – Global Information Systems
HCMC – Ho Chi Minh City, Vietnam
ICDP – Integrated Conservation and Development Project
IRF – International Rhino Foundation
IUCN – The World Conservation Union
Lao PDR – Lao Peoples' Democratic Republic
NBCA – National Biodiversity Conservation Area (in Lao PDR)
NGO – Non-Governmental Organizarion
NO – National Office (WWF)
NP – National Park
PO – Programme Office (WWF)
RCU – Rhino Conservation Unit
SAP – Species Action Plan
SCU – Species Conservation Unit (WWF)
SSC – Species Survival Commission (IUCN)
SWD – Sabah Wildlife Department (Malaysia)
TRAFFIC – Trade Records Analysis of Flora and Fauna in Commerce
TCU – Tiger Conservation Unit
TOR – Terms of Reference
WCS – World Conservation Society
WFC – Western Forest Complex (Thailand)
WWF – World Wide Fund for Nature; World Wildlife Fund (USA)

SECTION 1 – Introduction to WWF Asian Rhino and Elephant Strategies (AREAS)

1.1) Species Background and Conservation Needs

With a few notable exceptions, populations of the three Asian rhino species – Greater One-horned Rhinoceros *Rhinoceros unicornis*, Javan Rhinoceros *R. sondaicus* and Sumatran rhinoceros *Dicerorhinus sumatrensis* – and the Asian Elephant *Elephas maximus* have experienced major declines over the past few decades as a result of habitat loss, fragmentation, and poaching.

Because conservation funds required to reverse these downward trends are limited, conservationists have to find ways to use them most efficiently. This may mean an initial focus of conservation activities on only those populations that today appear to have the greatest chance of long-term persistence.

Over two decades of conservation efforts to increase the populations of the three highly endangered species of Asian rhinoceros have been largely unsuccessful. With the exception of the Greater One-horned Rhinoceros populations in Kaziranga and Chitwan national parks in India and Nepal, respectively, all the other Asian rhinoceros populations are at best stagnating and more likely in decline.

Large mammals, like rhinos and elephants, are wide-ranging and require extensive areas to support viable populations. It is possible that rhino and elephant populations in several of Asia's relatively small protected areas have reached carrying capacity, and the areas have inadequate ecological resources to support larger populations. The animals are unable to utilize the surrounding areas as habitat fragmentation of the natural habitat has led to an insularization of the reserves.

In many areas, the only chance to maintain or rebuild viable rhino and elephant populations is to include the larger landscape into conservation planning. Such a landscape approach to conservation would include:

1) expanding existing reserves and creating new reserves where possible;
2) linking proximal protected areas by corridors:
3) managing buffer zones so wildlife conservation activities and other natural resources provide more benefits to the local communities than irreversible extraction of resources;
4) encouraging low-intensity land-uses throughout the conservation landscape that are compatible with wildlife use and dispersal yet provide equivalent benefits: and,
5) re-establishing the traditions of the local people that once allowed their relatively benevolent coexistence with wildlife.

For decades, elephant populations have declined substantially in all range countries, with the possible exception of some areas in India. But even there, the species is losing

ground. Historically, the main causes for the decline of the Asian elephant have been capture for domestication and loss of habitat in the face of the expanding human population. While elephant captures other than for management purposes have been reduced to a few areas in Burma and Northeast India, the rate of human population expansion demands the most urgent conservation response.

Elephants inhabit some of the richest habitats in south and southeast Asia. Elephant habitat ranges from dry tropical thorn forest through deciduous forest and floodplains of rivers to tropical rain forest.

Healthy elephant populations need large amounts of space, ideally a mosaic of different vegetation types. Properly designed areas for elephant conservation would therefore be biologically diverse, making the elephant an ideal flagship species for the promotion of overall biodiversity conservation.

This approach to conservation is especially valid in regions where the value of biodiversity conservation is an abstract concept, but the value of "saving the elephant" is understood and pursued. More than any other potential flagship species the Asian elephant has a powerful significance for human society over much of its range in Asia and has been a religious and cultural symbol for centuries.

[adapted from: Wikramanayake E.D. and Dinerstein E. *Rhino conservation in Asia: The Challenge for WWF* (Draft Action Plan) and Sukumar R. *The Asian Elephant: Priority Populations and Projects For Conservation* (WWF Draft Action Plan)]

1.2) Workshop Goals

In preparation for the workshop, WWF had commissioned so-called Draft Action Plans (DAPs) (see Executive Summary extracts in Section 5 – Appendices), based on the current knowledge of the status quo of elephants and rhinos in Asia, and a poll of expert opinions on optimal conservation activities at this time.

Using the lists of populations compiled in the DAPs, the primary goal of the workshop was to identify priority areas for WWF involvement. Arbitrarily, workshop participants were asked to select three priority populations for each of the three rhinoceros species, and three priority populations of elephants within each of the three bioregions: the Indian Subcontinent (South Asia), Indochina, and Southeast Asia.

Where possible, participants attempted to achieve a representation of a diverse a range of habitats across each of the three bioregions.

Participants realized that WWF involvement, exclusively based on population levels, might lead to inefficient use of conservation funds if issues of range-wide similarity needed to be tackled. They therefore compiled a list of cross-cutting issues that should be worked on independently of each specific population. The results of such issue projects should be applied wherever appropriate.

Ultimately, consensus was to be reached on the Asian Rhino and Elephant Action Strategies (AREAS) which will guide WWF's conservation programs for these species for the next five years.

1.3) Selection Criteria Used By Workshop

The two DAPs listed the most significant elephant and rhino populations throughout their range but prioritized the populations using vastly different methodology.

The rhino DAP analyzed 17 populations across the three species which were considered important for long-term conservation. From this analysis, nine populations were selected as residing in potential conservation landscapes with enough remaining habitat, protected core areas, potential or existing habitat connections, and possibilities for conservation-compatible buffer zone management to allow population growth to sustainable levels. Six so-called Rhinoceros Conservation Units (RCUs) were identified as priorities for WWF involvement based on the following criteria:

1) Significance for rhinoceros conservation;
2) Significance for other umbrella and keystone species, such as tigers and elephants;
3) Habitat integrity and extent of available habitat;
4) Status within the Global 200 portfolio and the Asia Pacific eco-region assessment rank;
5) Existing WWF involvement and ongoing assistance.

The elephant DAP was much more complex than the rhino DAP because of the vast range and large number of elephant populations. The DAP reduced these to 23 significant populations using the following six parameters:

1) Population size – a large population, with its related long-term viability, has higher priority than a small population;
2) Overall biodiversity – regional presence of rare/endemic and flagship species;
3) Available habitat – important in terms of long-term prospects for conservation;
4) Threats from poaching, habitat fragmentation and human-elephant conflict;
5) Political suitability;
6) Significance of population to the sub-region (the DAP defined, in this case, four sub-regions: Indian subcontinent; Continental Southeast Asia; Islands – Sumatra/Borneo; Islands – Sri Lanka).

These parameters were weighted to determine an overall "conservation value" for each population. Based on this, suggestions for specific projects were listed for each range country.

Workshop participants were asked to further narrow down the DAP's priority lists using similar parameters as discussed above but also considering how WWF could make an effective impact in the selected priority areas. The final site selections differ greatly in the knowledge available about their populations. They range from the Western and Central

Terai (Nepal) rhino populations (highest) to populations in Indochina/Indonesia (lowest), and the Nilgiris-Eastern Ghats (India) elephant population (highest) to the lowest knowledge level in the "Emerald Triangle" (Vietnam/Laos/Cambodia). Tenasserim (Western Thailand/Southern Myanmar) represents another level of complexity when considering what effect WWF involvement could possibly have, with more than 50 NGOs already present in what is known as the Western Forest Complex on the Thai side of the border.

Each population was put through a series of "filters" during three working group sessions to assess the viability of WWF commitment to each site or landscape area. These included:

- WWF's capacity to implement a project;
- Political considerations at international, national, and provincial levels;
- The potential to form partnerships with other NGOs and government organizations;
- The impact WWF's involvement would have on the landscape and population;
- The contribution such a project would make to the overall policy work of WWF;
- The contribution such a project would make to preventative conservation measures;
- The sustainability of a project.

Working groups and site planners were urged to take on challenges in the attempt to link proximal core areas within a potential landscape. However, these "dream" landscapes were cross-examined at length to ensure basic questions of core area security, population status, corridor viability and security within range were considered alongside other threats and issues affecting each population.

SECTION 2 – Workshop Outputs

2.1) Selected Priority Populations

At the conclusion of the workshop, 13 priority population sites (8 for Asian Elephant: 3 each for Sumatran and Greater One-horned Rhinoceros; 2 for Javan Rhinoceros) were selected for WWF involvement across the three bioregions. Several other populations that had originally been considered but were eventually eliminated due to non-biological factors are also listed below with the reasons for their exclusion.

- **South Asia Bioregion**

1) Central Terai (rhino) – Nepal
2) Western Terai (rhino) – Nepal
3) Nilgiris/Eastern Ghats (elephant) - India
4) Kaziranga/Karbi Anglong (elephant) (overlapping with Brahmaputra Valley - rhino) – India
5) Arunachal-Assam-Namdhapa (elephant) – India

Additional populations considered:

a) Buxa/Manas/Bhutan (elephant + rhino overlap) –was put on hold as a priority at this stage due to insurgent activity in Assam.
b) South-eastern Sri Lanka – was reserved for ISSUES-BASED PROGRAMS for Asian Elephant

- **Indochina Bioregion**

6) Cat Loc/Cat Tien (rhino) – Vietnam
7) "Emerald Triangle" (elephant) – Vietnam/Laos/Cambodia tri-national area
8) Tenasserim (elephant) – Western Thailand/Southern Myanmar

Additional populations considered:

c) Western Laos (elephant) – The Sayaboury area might have a high population – it is too early to put it on a priority list but surveys should be conducted as soon as possible.
d) Yunnan/Northern Laos (elephant) – was eliminated because of WWF China's current lack of resources and its historically difficult relationship with local authorities; and the presence of numerous other foreign donor organizations in Xichuangbanna.
e) Northern Myanmar (elephant) and
f) Arakan Yomas (elephant)– were put on hold due to WWF's non-involvement-in-Myanmar policy.

- **Southeast Asia Bioregion**

9) Borneo – Sabah/Kalimantan (elephant + rhino) – Malaysia/Indonesia
10) Peninsular Malaysia – Taman Negara/Hala Bala (elephant + rhino)
11) Riau (elephant) – Sumatra, Indonesia
12) Bukit Barisan Selatan (rhino) – Sumatra, Indonesia
13) Ujung Kulon (rhino) – Java, Indonesia

Additional populations considered:

g) Gunung Leuser (Sumatra) – greater landscape could support long-term persistence of Sumatran rhino and Asian elephant but work by a large European Union-backed project means WWF resources are not needed at this stage.

h) Kerinci Seblat (Sumatra) – low population of Sumatran rhino, good potential landscape for translocation but not well protected enough at present. An existing WWF ICDP project will allow continued monitoring of the situation.
i) Way Kambas (Sumatra) – third largest population of Sumatran Rhino after Gunung Leuser and Taman Negara; important also for elephant; BUT funding secured from other sources (including WWF support for Rhino Protection Unit program) for the moment.

2.2) Sketches of Priority Populations

(Landscapes are graded according to WWF's involvement as of December 1998, where A = heavy/ongoing funding commitment, B = start-up level initiatives, and C = no WWF involvement (but other NGOs/Donors may be there.)

South Asia Bioregion:

1. Central Terai (Greater One-horned Rhino) – A

Current Population Estimate: 500 individuals
Reasons for selection: Best Rhino Conservation Unit (RCU) model for landscape-based conservation; high level of current WWF involvement; source population for further translocations to Western Terai; Global 200 eco-region; overlap with Tiger and Asian Elephant.
Main objectives: Raise population to 1000 individuals by 2010; restore 60% of buffer zone to natural conditions.

The rhino conservation program in the Central Terai zone of southern Nepal may represents one of the best possible models for landscape conservation to ensure the long-term survival of the three Asian rhinoceros species. The program began by ensuring that the rhinoceros population received effective protection within a strictly protected reserve, Chitwan National Park, which served as a core refuge and later as the source population for translocated populations to Bardia and Dudhwa (Western Terai). Then, conservation activities in the buffer zones ensured that the local people began to accept that a live rhinoceros was a more valuable resource than a dead commodity because of the potential revenue from tourism. Community-based eco-tourism programs in the buffer zone and national-level policies which have now made it mandatory that 50% of all future tourism revenues are to be recycled directly into local development offer the potential to strengthen local guardianship of endangered rhinos and tigers. Reforestation projects in the buffer zones created more than 30 km^2 of additional habitat used by more than 50 rhinoceros and the recruitment of more than 16 calves over a four year period.
The current population of the Central Terai is estimated at 500 individuals. An official buffer zone of 750 km^2 has been gazetted by the Department of National Parks, of which about 60% consists of degraded forests and grasslands that could easily be restored to increase the rhinoceros population. (Wikramanayke and Dinerstein, 1998)

2. Western Terai (Greater One-horned Rhino) – A

Current Population Estimate: 45 individuals
Reasons for selection: Build on successful translocations; link network of core protected areas; high level of current WWF involvement; Global 200 ecoregion; overlap with Tiger and Asian Elephant.
Main Objectives: Raise Bardia population to 100, Dudhwa to 50; establish founder populations in Sukla Phanta and Corbett; habitat restoration in Bardia buffer zone.

The increase in the rhinoceros population in Chitwan as a result of conservation efforts allowed surplus animals to be translocated to other core protected areas in the Western Terai (Bardia and Dudhwa); thus re-establishing rhinos in areas from where they had been extirpated. The recent efforts to create habitat

corridors to link the protected areas and allow dispersal and natural recolonization will be another important step towards achieving a rhino conservation landscape.
The ultimate conservation landscape for this population will consist of a wildlife corridor stretching from Rajaji and Corbett National Park in the west to Chitwan and Bara in the east. Such a landscape has also been suggested as the best option for long-term tiger (Dinerstein et al. 1997) and elephant (Sukumar) conservation in the region. The protected areas in this landscape with rhinoceros populations are Chitwan, Bardia, and Dudhwa and potentially, Sukla Phanta and Corbett. The initial target over the next three years is to increase the population of rhinoceros in Bardia to 100 individuals through translocations and strong protection. Other immediate needs are to census the population in Bardia, and continue to finance buffer zone activities. (Wikramanayke and Dinerstein, 1998)

3. Nilgiris-Eastern Ghats (Asian Elephant) – C

Current Population Estimate: 6,300-10,000 individuals
Reasons for Selection: Largest Asian elephant population: key population for long-term conservation: overlap with Tiger.
Main Objectives: Maintain and enhance habitat connectivity throughout range; balance sex ratios in some areas; reduce human-elephant conflict.

A large population of elephants ranges from the Brahmagiri hills south through the Nilgiri hills and east through the Eastern Ghats in the states of Karnataka, Tamil Nadu and Kerala. Covering an area of about 15,000 km^2, this population is estimated to have a minimum size of 6,300 elephants (and an upper limit of circa 10,000), making it by far the largest single population of elephants in Asia. Indeed, the importance of this population can be seen from the fact that it represents about one-fourth of India's elephant population and is larger than the estimated elephant population of any other country in Asia. Elephant densities here are among the highest recorded anywhere, either in Asia or Africa. This population (Elephant Reserve No.7 of India's Project Elephant) also maintains a very limited gene flow with the smaller population of the Nilambur-Silent Valley-Coimbatore area (Elephant Reserve No. 8).
This reserve is spread over a wide spectrum of vegetation types, including tropical montane stunted evergreen forests and grasslands, wet evergreen forests, semi-evergreen forests, moist deciduous forests, dry deciduous forests and dry thorn forests.
The administrative forest divisions span three Indian states: Kerala; Karnataka; and Tamil Nadu
Within this reserve, the elephant action plan of the Indian Ministry of Environment & Forests has identified four important zones with relatively intact habitat and/or large elephant populations. These are:

a) the Brahmagiri hills (Karnataka) with moist forests and a low density of elephants;
b) the Nagarahole, Bandipur (Karnataka), Wyanad (Kerala) and Mudumalai (Tamil Nadu) protected areas with deciduous forest and a high elephant density and population;
c) the BRT Sanctuary (Karnataka) and eastern portion of Satyamangalam Division (Tamil Nadu) with a diversity of vegetation types and a medium to high density of elephants; and
d) a 100 km tract along the Cauvery River (Karnataka) with dry forest and a medium density of elephants.

The overall strategy for this reserve is to maintain the quality and integrity of these four zones and the inter-connections between them. The links between these four zones are extremely tenuous in places. There are numerous enclaves of cultivation, with some of these occupying prime elephant habitats such as the swamps in the Wyanad. Tea and coffee plantations have also contributed to habitat loss and fragmentation. There are also serious pressures from developmental projects such as dams, canals, power houses, and a proposed railway line. Elephant-human conflicts are acute over practically the entire range. Poaching of tusked males for ivory is also a serious problem. Ratios of adult males to females are moderately skewed, and thus the genetically effective population size of elephants in this reserve is much less than the potential size. In spite of all the conservation problems, this population inhabiting a largely protected habitat is almost certainly the key population for the long-term conservation of the elephant in Asia. (Sukumar, 1998)

4. Kaziranga-Karbi Anglong (Asian Elephant) – overlapping with Southern Brahmaputra Valley (Greater One-horned Rhino) - Kaziranga, Orang, Pobitara – C
Current Population Estimates: Elephant – 2000-2500 individuals; Greater One-horned Rhino – 1300 (Kaziranga); 100 (Orang); 76 (Pabitora) – Total: 1476 individuals
Reasons for Selection: Largest population of Greater One-horned Rhinoceros; Rhino/Elephant/Tiger overlap; need to expand contiguous habitat.
Main objectives: Strengthen connectivity with Karbi Anglong habitat; secure Karbi Anglong uplands.

Asian Elephant habitat
The Kaziranga National Park, Karbi Anglong district and Naogaon district elephant populations constitute the largest population of elephants in Assam. At present only the 430 km^2 of Kaziranga National Park is protected while nearly 1000 km^2 of contiguous elephant habitat is unprotected in Karbi Anglong. The entire extent of elephant habitat in this stretch would be approximately 5000 km^2 (not contiguous). Kaziranga National Park has a mixed ecosystem of grasslands, high forests and marshy swamplands. During the monsoon, the River Brahmaputra floods a significant portion of the park forcing the elephants up into the more hilly terrain of Karbi Anglong. This area is covered by mostly tropical evergreen forests with patches of moist deciduous, bamboo breaks and mixed secondary forests on "jhum" (shifting cultivation) lands. The Naogaon district forests also link up with Karbi Anglong although these are not included in the proposed elephant reserve under Project Elephant (Reserve No. 4). Most of the area outside this lies under the jurisdiction of the Karbi Anglong District Council which is an autonomous council. (Sukumar, 1998)
Greater One-horned Rhino habitat
1. Kaziranga: Kaziranga National Park in northern India contains the largest population of Greater one-horned rhinoceros. In 1995, the population was estimated at 1,300 animals, representing a 12% increase over the estimate of two years before. The reserve is contained within the Brahmaputra Valley semi-evergreen moist forests ecoregion (Wikramanayake et al. in prep), and the habitat is mostly alluvial grasslands and semi-evergreen forest (Rogers and Panwar 1988).
The alluvial plains and moist deciduous forests of the lower and mid-reaches of the Brahmaputra Valley should be considered as a conservation landscape for the rhinoceros in Kaziranga, Orang, and Pobitara. Using these protected areas as core refuges for source populations, the long-term vision for a rhino conservation program should be to create additional habitat and linkages among these protected areas by restoring and managing the habitats where necessary. Other protected areas that once contained rhinos in the landscape include Laokhowa. Restoration of this biodiversity conservation landscape will join two Level III Tiger Conservation Units – Orang and Laokhowa – with Tiger Conservation Unit 16.
Large extents of suitable habitat in the park have, however, been lost to erosion along the Brahmaputra river to the north, and to human encroachment and development along the southern boundary. Habitat extensions are therefore needed, especially in areas not affected by floods. The Action Plan prepared by the Asian Rhinoceros Specialist Group (Foose and van Strien 1997), contains several project proposals for the period 1995-2000 that includes habitat expansion, provision and creation of artificial highlands as flood refuges, and habitat management to improve available habitat for rhinoceros.
2. Orang: The rhinoceros in Orang Wildlife Sanctuary represents the third largest population of Greater one-horned rhinoceros in the world. However, the number of rhinoceros in Orang has remained relatively constant at about 90 animals, although the estimated carrying capacity of the 7,260 ha reserve is over 150 animals (Foose and van Strien 1997). The habitat in the park, which is in the Brahmaputra Valley semi-evergreen moist forests ecoregion, is mostly alluvial grasslands. The sanctuary is also important for tigers.
3. Pabitora: The rhinoceros population in Pabitora Wildlife Sanctuary, Assam, India has shown an 18% increase from 1993 to 1995. However, the population is now near carrying capacity in the 3,883 ha reserve (Foose and van Strien 1997) which consists of alluvial grasslands and moist deciduous forests. The reserve extends across the Brahmaputra Valley semi-evergreen moist forests and Assam hills moist deciduous forests eco-regions. (Wikramanayake and Dinerstein, 1998)

5. Arunachal Pradesh-Assam-Namdhapa ("North Bank") (Asian Elephant) – C
Current Population Estimate: >3.000 individuals
Reasons for Selection: Potential connectivity within a protected landscape; importance to gene pool: Tiger overlap and rich biodiversity in general.
Main Objectives: Assessment of three sub-populations; establish corridors; combat poaching. illegal capture and illegal trade.

The elephant population is found to the north of the Brahmaputra River in the states of Assam and Arunachal Pradesh. This is not a contiguous population and is broken up into at least three sub-populations:

1) The most important population is the one inhabiting the proposed Kameng-Sonitpur Elephant Reserve No. 2. Approximately 1500 elephants inhabit the reserve (c. 7,500 km^2) which straddles the lower reaches of Arunachal Pradesh and adjoining Assam up to the Brahmaputra. The two states together have five protected areas in this region. namely Barnadi Wildlife Sanctuary, Sonai Rupai Wildlife Sanctuary and Nameri National Park in Assam and Eagle's Nest and Pakhui Sanctuaries in Arunachal Pradesh. Although within this area the contiguity of forest is broken at two places on the Assam side, the elephants maintain their movements through the Arunachal forests thus making this more or less a single population. Most of the habitat consists of tropical evergreen and alluvial plain semi-evergreen forests. Wet bamboo breaks occur intermittently throughout the area. The entire northern bank in Assam has been severely affected by insurgency and therefore protection, even within some of the protected areas in this region, has been affected. There is immediate need to extend protection to the other areas within this belt as also to the Arunachal forests that at the moment are less disturbed than the Assam ones. As this population is an inter-state one. the current political situations in both the states must be taken into account before any conservation measures are undertaken in the area.

2) The second sub-population stretches eastwards of Behali along the northern bank and includes the Dibru-Deomali proposed Elephant Reserve No. 3 of approximately 5000 km^2. Between 1200 and 1500 elephants are reported in this stretch of evergreen, semi-evergreen and mixed deciduous forests. The area is better protected than the previous sub-population and is of lesser immediate conservation concern.

3) The third sub-population is the least important of the three stretching west of Barnadi up to Manas National Park. The connections here have been broken by encroachments and felling and it is difficult to establish them once again, except perhaps from the Bhutan side. (Sukumar, 1998)

Indochina Bioregion

6. Cat Loc/Cat Tien – Vietnam (Javan Rhinoceros) – A
Current Population Estimate: 5-7 individuals
Reasons for Selection: Need to save one of only two remaining populations of Javan Rhino; Priority I RCU overlap with Tiger and Asian Elephant habitat; greater conservation landscape a Global 200 ecoregion; current WWF ICD Project.
Main Objectives: Protect core habitat from further encroachment; full population assessment.

The Javan rhinoceros population in southern Vietnam is protected within the Cat Loc Nature Reserve, which was declared a protected area in 1992 after the 'discovery' of the rhinoceros (Santiapillai et al. 1991). However, the local people, an ethnic minority group known as the Chau Ma, had known of the rhinoceros and not interfered with them before the population's existence was known to authorities and scientists.
Until about ten years ago the Javan rhinoceros was also found in the nearby Nam Cat Tien National Park. The two protected areas are now separated by a 5-7 km belt of human habitation and agricultural areas cultivated by the Kinh, Vietnam's largest ethnic group, of which there are 5-10,000 living in the corridor.

A long-term conservation management program to increase the rhino population should provide additional habitat by creating a protected areas complex consisting of Cat Loc, Nam Cat Tien and Tay Cat Tien in a landscape that includes buffer zones and linkage zones.
Creating such a conservation landscape will entail: habitat restoration in the intervening area between the protected areas to allow for dispersal of rhinos from Cat Loc to Cat Tien; relocation of new settlers from the protected areas and buffer zones – especially from habitat critical for rhinos – and preventing future encroachment into the core protected areas; restoration of habitat within the protected areas; and involving and empowering the local villagers with protection and stewardship rights. (If this cannot be done, then translocation of the rhinos to the better protected Cat Tien core area must be considered.)
Recently, WWF began to implement a five-year ICDP project in Cat Tien that will include a biodiversity and buffer-zone conservation component. The project will also attempt to amalgamate Nam Cat Tien (38,202 ha), Cat Loc Nature Reserve (30,635 ha), and Tay Cat Tien Reserve (5,382 ha) (an extension of Nam Cat Tien into Song Be Province). (Wikramanayake and Dinerstein, 1998)

7. "Emerald Triangle" Vietnam-Laos-Cambodia tri-junction (Asian Elephant) – B

Current Population Estimate: 600-800 individuals
Reasons for Selection: Protection of still largely undisturbed habitat; high biodiversity and TCU overlap; Global 200 ecoregion.
Main Objectives: Secure network of core protected areas; transboundary co-operation within protected area management plans; conservation education.

The Central Indochina tropical lowland plains that characterize much of the tri-junction of Vietnam, Laos and Cambodia probably supports the most important elephant population of Cambodia and Vietnam and one of the three larger populations in Laos.
This landscape contains several large protected areas, including Virachey National Park, Lomphat Wildlife Sanctuary (Cambodia), Nam Khong, Xe Piane NBCA (Laos), and Chu Momray Nature Reserve (Vietnam) that total in excess of 800,000 ha. The conservation landscape is also a Level I Tiger Conservation Unit and a Global 200 ecoregion.
On the Vietnam side of the 'Emerald Triangle' (as this area is beginning to be known among conservation groups), the Dak Lak wild elephant population is estimated to support 30-60 individuals. The area is characterized by dry deciduous forests and is part of the central highlands of Vietnam. In addition, this area supports about 160 domestic elephants that are frequently left into the forests and thus, in some cases, may even be considered as feral.
On the Cambodian side very little is known of the actual elephant populations. The Virachey National Park and parts of the Simpang district to its west comprise traditional elephant distribution areas (although some reports suggest that elephants may be wiped out of some part of this range today). Cambodian information points to locally high populations in Virachey NP and Mondulkiri province, with maximum guess-timates at 500 elephants in the region.
On the Lao side of the tri-junction, the Xe Piane and Don Khanthung areas (evergreen, mixed deciduous and dry dipterocarp forests) have elephant populations which are not estimated numerically. One guess-timate put the number as around 100-200.
This would give a total population of between 600-800 elephants for the three countries. It is also to be noted that the East Dangrak forests of Thailand are very close to the Don Khantung area of Laos. The Thai area has also recorded elephants although in the low dozens. (Sukumar, 1998)

8. Tenasserim – Western Thailand and Southern Myanmar – (Asian Elephant) – B

Current Population Estimate: >1000 individuals
Reasons for Selection: Long-term conservation significance for continental Southeast Asia; high biodiversity in general; Global 200 ecoregion.
Main Objectives: In-depth study of Western Forest Complex population(s); integrated workplan with >50 NGOs working in the greater landscape; buffer zone promotion.

The Tenasserim mountain range along the border of Myanmar and Thailand is home to one of the more significant populations of elephants in the Southeast Asian region. The evergreen and moist deciduous forests here are more extensive on the Myanmar side of the border, although some significant forest areas still remain in Thailand. The total elephant population here is certainly in excess of 1,000 individuals. Dense moist forests are seen on the Myanmar side of the Tenasserim range. At present the estimates of the elephant population here are only guesses or based on questionnaire surveys. The forest department estimates 170 elephants in Kayin and 150 elephants in Tenasserim Divisions, but there could be potentially higher numbers given the large area of forest (over 18,000 km^2) here.
Of Thailand's estimated population of 1500-2000 elephants, a very large proportion is believed to be in the northern and western ranges. In North-west Thailand the protected area complex of Huai Kha Khaeng and Thung Yai Wildlife Sanctuaries, along with the Sri Nakarin and Erawan National Parks, holds the maximum potential for elephant conservation for the future. These form the core of a western protected area complex covering around 15,000 km^2. A mosaic forest of mixed deciduous, dry evergreen, bamboo and secondary forests constitutes most of the habitat in this region. Riparian forests follow the major rivers in the area and these, along with their mixed grasslands, are important elephant habitats. The Huai Kha Khaeng and Thung Yai complex hold a minimum of 300-500 animals. Kaeng Krachen to the south of the complex is reported to have a population of 150. The entire western complex is therefore of high conservation priority in the country especially considering that most of this range has contiguous forests to its east with Myanmar and elephants move regularly between the two countries. (Sukumar, 1998)
(WWF cannot, under current policy, work in Myanmar)

Southeast Asia Bioregion

9. Peninsula Malaysia (Taman Negara-Belum) and Southern Thailand (HalaBala) – "HaBeTa" landscape area (Asian Elephant + Sumatran Rhino) – C

Current Population Estimates:
400 in Taman Negara, possibly 600 in whole area (elephant): 54 (rhinos)
Reasons for Selection: Habitat exists for long-term conservation of both elephant and rhino: overlap with Level I TCU.
Main Objectives: Buffer zone establishment: secure corridor between Taman Negara and Hala Bala; anti-poaching and protection initiatives.

Although the elephant is widely distributed in primary and secondary rain forest in peninsular Malaysia, there is considerable fragmentation of habitat and isolation of herds. Many of the herds in forest fragments beyond recovery are being translocated to mostly Taman Negara National Park. The park has an area of 4,350 km^2 and contains Malaysia's largest remaining area of pristine lowland dipterocarp forest as well as montane forest. It is clearly the outstanding place for long term conservation of the species. Despite all the translocations, the Malaysian Wildlife Dept. estimates its elephant population at about 400 elephants (Sukumar, 1998). Surveys of the population, the movements of the translocated and resident elephants within the indicated landscape, their impact on surrounding developments, new potential release sites should probably be conducted. New forestry concessions in previously protected state reserves should be reviewed, and the importance of the connectivity between existing core areas should be made clear to the public and political decision makers (Stuewe, 1999, *pers.comm.*).
The Taman Negara-Belum Tiger Conservation Unit (Dinerstein et al. 1997) can serve as the conservation landscape for a Sumatran rhinoceros population in the Malaysian Peninsula. The habitat in this conservation landscape is mostly tropical wet evergreen forests. The protected areas include the large Taman Negara National Park, Belum Forest Reserve, Tasek Temenggor, Krau Wildlife Reserve, and Cameron Highlands Wildlife Reserve.
Most of the remaining forests are montane, where the steep slopes have precluded the large-scale land clearing that has taken place in the lowlands for logging, plantations, and agriculture. Less than 20% of the original, dipterocarp-dominated lowland forests now remain. The submontane and montane forests have fared better, although logging, resort development, and road construction now pose threats to the montane areas as well.

Belum, a 215,000 ha reserve in the Peninsular Malaysian montane forests ecoregion harbors a small population of 10 rhinos. The habitat is mostly primary and secondary montane wet evergreen forest.
In 1995, the rhino population in Taman Negara National Park in the Malaysian Peninsula was estimated at about 44 animals, reflecting an increase from the 1993 estimate of 22-36 animals. However, this is still far below the estimated carrying capacity of over 220 animals in the 434,351 ha park (Foose and van Strien 1997).
Most of the park is montane wet evergreen forest, and lies in the Peninsular Malaysian montane forests ecoregion, but also extends into the lower elevation Peninsular Malaysian moist forests ecoregion. This population of Sumatran rhinoceros is also within a Level I Tiger Conservation Unit.
The Sumatran rhinoceros, together with the tiger and Asian elephant, can be used as a flagship species to promote conservation efforts that will include additional protected areas in the lower elevation forests, habitat linkages to provide movement and dispersal corridors, and buffer zone development to counter the extensive land-use by logging and plantation sectors. (Wikramanayake and Dinerstein, 1998)
The broad landscape between Taman Negara and Hala Bala is mainly commercial forestry, and some oil palm plantations. New logging concessions are being awarded for operations in the Temenggor Forest Reserve. The Belum Forest Reserve, the main forested link to Thailand, is also under threat (Sharma, 1999, *pers. comm.*).

10. Borneo – Sabah/Kalimantan – Tabin Wildlife Reserve, Danum/Maliau block, Ulu Sembakung – "TaDaMUS" landscape area (Asian Elephant/Sumatran Rhino) – C

Current Population Estimates:
Elephant – 500-2000 individuals; Sumatran Rhino – 20 individuals.
Reasons for Selection: Elephant/rhino overlap with Tiger; overall biodiversity value: landscape potential to connect four proximal protected areas.
Main Objectives: Secure core areas and upgrade protected status of Tabin and Ulu Sembakung blocks; establish secure corridors: ensure long-term health and viability of rhino/elephant populations.

Asian Elephant: The elephants on the island of Borneo are very interesting from a historical point of view. There are indications that they may be descendants from captive elephants given to the Sultan of Sulu in 1750, which subsequently escaped into the wild. Today most of Borneo's estimated 500-2000 elephants are found in Sabah (Malaysia) with a marginal extension into Northern Kalimantan (Indonesia). Within Sabah elephants may range over an area of 18000 km^2, mostly dipterocarp forests in hilly terrain. Of these it is believed that there are only three viable populations of elephants, those in the Tabin Wildlife Reserve (1220 km^2) and the Kinabatangan and Ulu Segama areas. Fragmentation of the populations is an ever increasing risk as conversion of primary and secondary forest to oil palm and pulp plantation is progressing rapidly. Additional conservation areas and linking corridors should be demarcated as soon as possible so they can be included in the inevitable planning for the forestry concessions. The forests of Sabah are very rich in biodiversity, managing to conserve large areas of habitat for elephants here would also have a major positive impact on the conservation of the island's overall biodiversity (Sukumar, 1998). The Yayasan Sabah area, encompassing the Danum Valley and Maliau Basin, is also believed to support an elephant population. (van Strien, 1999, *pers.comm.*)
Sumatran Rhinoceros: The Tabin Wildlife Reserve in Sabah has a small Sumatran Rhinoceros population estimated at about 18 animals, and the population has remained relatively constant although the 120,000 ha reserve has an estimated carrying capacity of about 120 animals (Foose and van Strien 1997). The reserve is located in the Northeast Borneo moist forests ecoregion, but satellite imagery indicates that the habitat is degraded (Wikramanayake et al. in prep.). (Wikramanayake and Dinerstein, 1998) Tabin WR is no longer connected to southern Sabah, the only corridor still possible is a stretch of forest leaving Tabin WR in the north-west and then arching south.
The Danum Valley and Maliau basin together make up what is referred to as the Yayasan Sabah area. It is estimated that there are as many Sumatran Rhinos in this area as there are in Tabin Wildlife Reserve. The current management initiative of Yayasan Sabah is based on sustainable utilization of natural forest –

which provides good opportunities for long-term persistence of large mammal populations. (van Strien, 1999, *pers.comm.*)

11. Riau province, Sumatra (Asian Elephant) – C

Current Population Estimate: 1,100-1,700 individuals
Reasons for Selection: Greater landscape holds largest Sumatran population of elephants.
Main Objectives: Secure Bukit Tigapuluh National Park: create additional conservation areas and establish corridors; control human-elephant conflicts.

Riau province holds an estimated 35-40% of Sumatra's elephants . The population is estimated at 1100-1700 elephants, which are mostly found in fragmented habitats. The five populations in north-central Riau, Koto Panjang, south-central Riau, southern Riau and Siak Kecil seem to be most valuable. The present network of protected areas is inadequate for the survival of elephants. Riau is one of Indonesia's major oil-producing areas. Wide-spread logging and human transmigration projects have led to immense human/elephant conflicts. Two elephant training centers have been established to which captured "problem" elephants are brought. This practice, together with direct killing of "problem" elephants has been a major drain of the wild elephant population in the past two decades. If past provincial policy decisions are any indication, the future of Riau's forests and elephants will clearly be dictated more by economic than by ecological considerations.(Sukumar 1998; Stuewe 1999, *pers.comm.*)

12. Bukit Barisan Selatan (Sumatran Rhino) – C

Current Population Estimate: 20-40 individuals
Reasons for Selection: Landscape potential for network of core protected areas; Priority II RCU; TCU overlap and high biodiversity value.
Main Objectives: Secure protection of southern section of the National Park; restore original National Park boundaries; increase rhino numbers.

Bukit Barisan Selatan is thought to contain about 22 Sumatran rhinoceros as of 1995 (5 confirmed) according to Foose and van Strien (1997) and may have either declined or remained stable since the 1993 estimate. However, the landscape is large enough to support a rhino population of at least 50 individuals (Foead, 1999, *pers. comm.*).
This large (3,650 km^2) protected area lies along the southern extent of the Barisan mountain range and serves as the anchor for this rhino conservation unit, which corresponds to the Bukit Barisan Selatan-Bukit Hitam Tiger Conservation Unit in southern Sumatra (Dinerstein et al. 1997).
There are several other protected areas in the RCU that form protected areas complexes. These include:

- the Bukit Barisan Selatan-Paraduan Gistana complex;
- the Gunung Patah-Bukit Balain Rejang-Bukit Nantiogan Hulu complex
- the Bukit Dingin-Bukit Hitam complex;
- the Bukit Raja Mandara-Bukit Balal complex.

However, many of these protected areas are inadequately surveyed, and the status of the rhino population (even presence/absence information for some protected areas) is unknown.
Most of the remaining habitat in this landscape is submontane or montane forests, but satellite imagery indicates that there are some unprotected lowland forests to the south of Barisan Selatan NP, in the Central/Southern Sumatra moist forests ecoregion. Although the montane forests are relatively intact, the forests in the lower elevations have been degraded or converted, even within the protected areas (see MacKinnon 1997, Map 8a).
Poaching remains a significant threat to the survival of rhinoceros. The poachers are quite mobile, and are said to move between Kerinci Seblat and Bukit Barisan Selatan in response to the patrolling and protection efforts of the anti-poaching teams.
A landscape approach to conservation will entail providing the core reserves strict protection and establishing appropriately managed buffer zones and habitat linkages where necessary and possible. Involvement of local people in these activities is essential. The potential for eco-tourism is high given the presence of other large, charismatic mammals such as the Tiger (*Panthera tigris*), Malaysian Tapir (*Tapir*

indicus), Asian Elephant (*Elephas maximus*) and possibly the Orang Utan (*Pongo pygmaeus*). (Wikramanayke, 1999, pers.comm.)

13. Ujung Kulon (Javan Rhino) – A

Current Population Estimate: <60 individuals
Reasons for Selection: Major source population of Javan Rhinoceros (Priority I RCU).
Main Objectives: Establish new population – feasibility assessment of translocation; secure long-term protection of existing Ujung Kulon population.

The rhinoceros in the Ujung Kulon peninsula in western Java are protected within the national park, which offers core refuge. But the high human population density in Java and large-scale habitat degradation makes a landscape conservation approach a difficult prospect. The rhinoceros population has not shown any indication of increasing over the past two decades despite protection (Sriyanto and Sutedi 1997). Management to provide better habitat and food for rhinoceros in order to increase the carrying capacity has been proposed (Foose and van Strien 1997, Sriyanto and Sutedi 1997, Putro 1997); however, since the reserve is small and isolated, other management actions including translocations to larger reserves with suitable habitat have also been proposed (Foose and van Strien 1997, Dinerstein in prep). (Wikramanayake and Dinerstein, 1998)

2.3) Regional Cross-Cutting Issues

The cross-cutting issues outlined in this note were compiled from the working groups' discussions and are not meant to be all-inclusive. Wherever possible, the perspective in which the issues were raised from the working groups were summarized. Participants were of the opinion that there were issues, as summarized below, which affected all populations of both species but were not necessarily contained within the bioregional habitats.

It is important to note the following when exploring each of these issues:

- Project developers and implementers should review the list of issues and consider the relevant or potential impact of the issues on elephant and/or rhino populations in the project sites.

- The WWF family, as a whole, has a number of policy researchers that work on these issues and they may be a valuable resources can could inform and help in the field. Equally, information from field projects can help policy staff across the network develop meaningful policies and positions in order to facilitate conservation progress at the national, regional or international level.

- A number of projects for TRAFFIC and wildlife trade-related work was suggested. It is possible for TRAFFIC to assist in designing a trade component to be built into the individual AREA projects. Where the impact of trade is at a higher level, including national and international, TRAFFIC's work would necessarily be removed further from the field, although it is important that links are established between the projects and TRAFFIC offices.

- The issues have been, in some cases rather arbitrarily, categorized as follows and are not in any order of priority. Some overlap and duplication is unavoidable because of the many facets of any one issue.

  A: Recommendations for work at the international level, e.g. development of policy position by WWF, or resources that are or might be available from partner organizations, as well as the WWF network.

  B: Issues to be taken up by NOs/POs at the national, or perhaps regional, level..

  C: Issues that project leaders need to consider when developing and planning project proposals/activities/budgets at the field level.

A: INTERNATIONAL LEVEL

1. As an aid to field/project executants, it would be useful to develop a list of published literature on some of the cross-cutting issues.

2. Resettlement – WWF should develop a policy on resettlement of people in protected areas (if it does not already exist).

3. Human/Wildlife conflict – development of models and sharing of experiences from other WWF projects, or elsewhere, and compilation of a resource base.

4. Poverty, gender, low literacy and family planning – lessons to be learned and experience from CD projects and from partner organizations. Provision of information to project leaders.

5. Environmental Education – there is wide experience across the network which could be accessed for the benefit of field projects.

6. Non-priority populations of Asian rhinos and elephants (i.e. not identified within current action plans). Requirement for WWF policy/position statements.

7. Captive breeding of Asian rhinos – requirement for a WWF policy/position statement.

8. Domesticated Asian elephants – further investigations of the issues across the regions are needed to provide recommendations. Also WWF policy/position statement.

9. Reintroduction into the wild of domesticated elephants – WWF recommendations and policy/position statement.

10. Climate change – climate change may in the future have an impact on priority sites. Potential for further impacts studies to be undertaken.

11. Wildlife trade – need for coordination with TRAFFIC and information provided from on-the-ground intelligence networks. TRAFFIC could develop possible projects suggested at the workshop e.g. looking at consumer demands and attitudes in Asian markets.

12. CITES (COP 10) decision on certain African elephant populations' downlisting. WWF CITES Working Group (CWG) to consider implications for Asian elephants.

13. Land tenure rights – IUCN has been compiling work on these which could be of use to project executants in the field.

14. Tourism – threats and opportunities. Use of examples and experience across the network and policy feed-in to international work on tourism e.g. at the Commission on Sustainable Development.

15. Forests for Life – WWF International forests policy work. Opportunities to link with Forests for Life targets, forest certification, etc.

16. Public awareness and external communications – the Steering Group and Coordinator(s) will ensure that this part of their remit, but there is equally a role for all project leaders, Programme and National offices.

17. Inter-network communications - it is important these are maintained between all the species action coordinators (tigers, pandas, elephants, rhinos), with the Sub-Committees and the CITES working group.

B: NATIONAL (OR REGIONAL) LEVEL

1. Developing political will for wildlife conservation. targeted at policy makers. Sometimes requiring high level representation to initiate and promote discussions.

2. Aid – Looking at potential for aid agency support to elephant and rhino conservation. Equally, reviewing their support for harmful development vis-a-vis priority wildlife populations.

3. Development projects, by national governments or Trans-national corporations. Again, how to discover potential threats and address them.

4. Capacity building both within official wildlife agencies and other NGOs – requires technical support and funding.

5. National legislation – obviously each NO/PO will be working at this level, but it also useful to consider impacts of, and possible synergies with. international treaties such as CITES, Convention on Biological Diversity (CBD), Climate Change Convention, etc.

6. Sustainable funding for conservation (i.e. funding for recurrent activities). National Organizations and Programme Offices could share experiences and ideas as there will need to be a plan for continued support in many of the priority areas and ideally to develop an exit strategy in the longer term.

7. National land-use policies and national policy coordination. Useful to be aware of the requirements of the CBD and how it will impact on the development of national biodiversity plans, where ratified. For example. CBD requires an integrated and cross-sectoral approach to biodiversity conservation.

8. Links with Forests for Life targets. Use of WWF network forests policy experience. (As A:15 above).

9. Transboundary co-operation – as well as working with multilateral agencies, also potential to use the approach of bilateral cooperation.

10. Public awareness, intra-network and external communication possibilities.

C: FIELD LEVEL

1. Human/wildlife conflict – potential for sharing of experiences with other field projects, testing of existing models, development of new models to address problem.
   (Also A:3 above).

2. Community benefit-sharing and incentives. Again the use of models developed elsewhere, sharing of experiences, lessons learned. Links to work being developed under CBD.

3. Choice of partner organizations and where necessary capacity building, technical support to partner NGOs.

4. Nature of relationship with local or national government. Is there political will? Are there government policies that will impact on proposed project, e.g. resettlement, land-use?

5. Migration and transmigration. Why people are moving, will there be an impact on proposed project, where can policies be influenced?

6. Civil strife – current or potential that will impact on proposed project area. Obviously out of WWF's hands but is a critical success factor.

7. Poverty, gender, low literacy and family planning. Lessons to be learned from WWF ICD projects and elsewhere as well as experiences to address the issues for the benefit of the project. (As A:4 above).

8. Climate Change – potential impacts on chosen priority sites, consider implications when planning extensions to protected areas, corridors, etc.

9. Tourism – threats and opportunities, including funding source and public awareness/conservation education. Experiences from other projects.

10. Logging and timber trade – impacts of logging tracks on forest, poaching, and bushmeat trade. Legal and illegal logging. Links with WWF international forest policy work and forest certification. (As A:15, B:8).

11. Technical/scientific collaboration – e.g. IUCN Specialist Groups, TRAFFIC for forensic studies, government institutes, academic institutions, etc, etc.

12. Potential implications of CITES downlisting of certain African elephant populations for Asian elephants. TRAFFIC and WWF CITES group need to have information from the field (As A:12 above)

(cross-cutting issues compiled by Sally Nicholson (WWF-UK) in consultation with TRAFFIC representatives)

2.4) Crucial considerations for an integrated program

– a discussion of "real" cross-cutting issues contributed by Michael Stuewe

1) Domesticated or tame Asian elephants

They represent 25-35% of the Asian elephant gene pool. WWF can either deal with the issue of tame elephants on a case by case basis as it touches specific elephant conservation issues or come to a network-wide policy decision. It seems that the gene pool locked in tame elephants is too large for WWF to ignore.

Tame Asian elephants, other than livestock or zoo animals, mostly originated in the wild or are first generation captive-bred. Tame Asian elephants have been an integral part of Asian cultures for centuries and are thus the ideal flagship species. Increasingly, elephant management actions like encampment and translocation not only involve tame elephants as "workers" but also directly affect wild populations both at the point of origin and the point of delivery, thus blurring the borders between a wild and a tame elephant.

There is an overabundance of elephants in some parts of the range and a need or capacity for additional elephants in others. It appears now that elephants can be successfully reintroduced into ranges from which they had been extirpated, thus providing the potential for increasing number and size of wild populations.

All these "tame elephant" issues: flagship species role; use as "workers" in elephant management activities: translocation; and reintroduction are likely to be common themes in several priority populations. An issue project dealing with these themes and providing guidance for the individual population-based projects would seem necessary.

2) Human / Elephant Conflict Mitigation

This issue is clearly range-wide. There are only very few solutions, for all of which good manuals need to be developed in local languages. Solutions include "scare tactics", "electric fences", "changes in land use", "captures", and "damage compensation schemes". There is no need to reinvent the wheel at each site.

3) Wildlife Trade

TRAFFIC would need to provide training for establishing local on-ground intelligence networks and monitoring at the national level. TRAFFIC would also need to integrate project sites into a communications network to allow fast information flow. In addition, TRAFFIC could develop projects to run concurrently, such as looking at consumer demands and attitudes in Asian markets and how to counter them.

4) Community Benefit-sharing and Incentives

Models have been developed in some areas. This topic especially needs in-depth on-site attention. Knowledge transfer is not easy because of the complexity of stakeholder relations in each individual case. But the sharing of experiences and of lessons learned between stakeholders of different areas could be a crucial factor in sparking the interest of stakeholders in areas where community benefit-sharing is to be developed.

5) Common database

The establishment of a database embracing literature, manuals, videos, project reports and any other relevant materials would enable information sharing by all individual projects. Ideally, this database would be Internet-based to allow for fast access from all corners of the range.

6) Web Page

All of the population projects will involve a landscape approach. As there is not enough protected landscape available it will need to be created. That means much of the project work will involve lobbying of governments and decision makers in general.
The local media are often the biggest allies for such activities. It would be very useful if a comprehensive web page would be designed which clearly shows the regional approach to this WWF effort, points out the common problems and their individual solutions in the different areas, and shows how progress is being made in the projects. Publicizing successes in one area could then be used to rally support in other areas to examine the feasibility of applying the same initiatives in another context.
The web page would likely draw in video documentary production teams whose products could be used for in-country and international advertisement of activities. They could also be distributed to other project sites and possibly serve as manuals for certain activities.

Section 3 – Follow-Up Action

3.1) Timetable for Programme Establishment:

February 4-8	- AREAS Workshop Report presented at Asia-Pacific Sub-Committee meeting in Dalat, Vietnam
March 1	- John Newby handover to consultant for co-ordination/monitoring
March 31	- **Deadline** for individual project concepts to be submitted to WWF-US and WWF International Species Conservation Unit
May 31	- **Deadline** for full proposals for each site in WWF format, to be submitted to WWF-US and WWF International SCU
June	- WWF Netherlands board meeting

3.2) Programme Establishment Terms of Reference (TOR):

1) Develop program portfolio from workshop proceedings;
   - Final Species Action Plans, with projects matrix;
   - Overview of funding allocations from network and funding strategy;
   - Project proposals for top priorities of 3 Bioregions and project concepts for others;
2) Develop program co-ordination structure to service: Regional Programme (Asia-Pacific); WWF International Species Unit; project executants: Steering Group and Technical Working Group (including TOR and budget);
3) Develop communication and marketing strategy for overall program;
4) Ensure effective integration with other Species Action Plans (e.g. Tigers) and related trans-regional issues and activities;
5) Compile existing materials from past/ongoing WWF work on priority project areas and priority issues.

3.3) A Three-Part Progression:

Phase 1 – Programme Planning (December 98 – February 99):

- The Workshop Outputs (Priority Landscapes, Matrices, Cross-Cutting Issues) must be pursued within an existing WWF framework/format to allow national-level priorities to interface with landscape-based objectives.

- At this stage, the 13 Priority Landscapes are divided across six WWF Programme/National Offices (India, Nepal, Thailand, Indochina, Malaysia and Indonesia). The initial follow-ups involve workshop participants liasing with their PO/NO and catalyzing further action within local networks, so that on-ground support can be evaluated and any shortcuts (e.g. existing project proposal for Ujung Kulon) can be identified.

- These initial follow-ups will be backed up by WWF resource personnel (as tabulated below). Sally Nicholson (WWF-UK) is the focal point to ensure cross-cutting issues are integrated with the overall strategy.

- From December-February, John Newby (WWF International) is the overall co-ordinator responsible for monitoring the overall project/program development.

POPULATION	WWF OFFICE	RESPONSIBLE PERSON	RESOURCE BACKUP	OVERALL CO-ORDINATOR
1) Central Terai	WWF Nepal / WWF India	Anil Manandhar Pramoj Tyagi	Eric Dinerstein	John Newby
2) Western Terai	WWF Nepal / WWF India	Anil Manandhar Pramoj Tyagi	Eric Dinerstein	JN
3) Nilgiris / Eastern Ghats	WWF India	Pramoj Tyagi	Eric Dinerstein	JN
4) Kaziranga / Karbi Anglong	WWF India	Pramoj Tyagi	Eric Dinerstein	JN
5) Arunachal-Assam-Namdhapa	WWF India	Pramoj Tyagi	Eric Dinerstein	JN
6) Cat Loc / Cat Tien	WWF Indochina	Gert Polet / David Hulse	Eric Wikramanayake	JN
7) Emerald Triangle	WWF Indochina	David Hulse	Eric Wikramanayake	JN
8) Tenasserim	WWF Thailand	"Bok" Sakon Jaisomkom / Robert Mather	Michael Stuewe	JN
9) Borneo	WWF Malaysia / (WWF Indonesia)	Dino Sharma (Nazir Foead)	Michael Stuewe / Eric W	JN
10) Penins. Malaysia	WWF Malaysia	Dino Sharma	Michael+Eric W	JN
11) Riau	WWF Indonesia	Nazir Foead	Michael+Eric W	JN
12) Bukit Barisan	WWF Indonesia	Nazir Foead	Michael+Eric W	JN
13) Ujung Kulon	WWF Indonesia	Nazir Foead	Michael+Eric W	JN

- During the December-February period. John Newby will compile a TOR for a Consultant to take over the overall monitoring and co-ordination on March 1.

- Those designated WWF PO/NO personnel responsible to take initial steps are asked to use the period January 1-May 31 to outline concepts for each Landscape initiative for submission to the Asia-Pacific Regional Programme so marketing to potential donors can begin. Each PO/NO must submit detailed proposals for the sites to WWF US and WWF International's Species Conservation Unit by May 31 using standard WWF formats.

Phase 2 – Programme Establishment (March 99-June 99):

- Using the Final Workshop Report as a starting point, WWF's Asia Pacific sub-committee (APSC) will assume responsibility for Elephant/Rhino activities, supported by expertise from WWF network.

- Pending approval from APSC, this support will be formalized by a Steering Group (SG), comprising:
  - Representatives from the three main donors – WWF Netherlands, WWF-US, WWF-UK (+ more donors);
  - Head of WWF International Species Unit;
  - Regional Director (Asia-Pacific Sub-Committee);
  - Programme Co-ordinator(s) + Secretary;
  - (plus resource people as necessary).

- TOR of Steering Group:

  1) Ensure Management and Administration levels;
  2) Ensure goals of both Species Action Plans (SAPs) are met;
  3) Ensure efficient monitoring and evaluation;
  4) Account for both SAPs, regional Subcomm, PC, LPC, TRAFFIC Committee;
  5) Ensure efficient marketing/communication, and securing of funds;
  6) Effective output to and from WWF policy level.

- By June 1999, the SG will have produced the following:

  1) A Programme Portfolio for Asian Rhinos and Asian Elephants;
  2) A Programme Co-Ordination and Management Structure;
  3) A coherent funding strategy.

- The Steering Group members are (as of January 31, 1999):
  - Isabelle Louis
  - Ginette Hemley
  - Jikkie Jonkman
  - David Hulse (until Vietnam proceedings and action strategy are completed)
  - Sally Nicholson
  - John Newby
  - Steve Nash (TRAFFIC International)
  - AREAS Coordinator (when recruited)
  - Technical resources staff as needed

Phase 3 – Programme Implementation (July 99-June 2004):

- The SG will continue to meet once a year, in December.

- In addition, a Technical Working Group (TWG) will meet twice a year (July/early December) to feed into six-monthly reports and the December meeting of the SG (once again, the TWG will depend on APSC approval).

- The TWG will comprise:
  - Programme co-ordinator(s);
  - Project team leaders;

- Species resource personnel:
- Bioregional-level resource personnel;
- TRAFFIC resource personnel.

- The outputs of the SG & TWG will focus on the following:
  - Programme/Project activities:
  - Objectives of Elephant/Rhino population protection and increase;
  - Ongoing Monitoring and Evaluation.

3.4) Proposal for funding project development

Identifying priorities for the conservation of Asian rhinos and elephants in priority bio-regions

Recognizing the value of conserving flagship species, WWF has initiated the development of an Asian Rhino and Elephant Action Strategy (AREAS). This is consistent with the priorities defined in the WWF Asia/Pacific Regional Strategy. As a first step, comprehensive status reviews were commissioned by WWF for Asian Elephants and the 3 species of Asian Rhino (Greater One-horned, Javan, Sumatran). These reviews were presented, together with other information, at a consultative workshop held in Vietnam from 1-4 December, 1998, with representation from WWF offices in range states, WWF donor NOs, WWF International, IUCN/SSC specialist group members, and other resource people. The process resulted in 13 areas being selected for priority action by WWF. For seven of these areas, little information is available. The others have ongoing WWF or partner projects that provided the necessary baseline information. Classified by bio-region, these seven areas fall into:

a) Indochina: (1) Tenasserim – Thailand (E)
b) South Asia: (2) Kaziranga-Karbi Anglong– India (E,R), (3) Arunachal-Namdhapa – India (E)
c) Southeast Asia: (4) Sabah – Malaysia (E. R), (5) Peninsular Malaysia (E,R). (6) Riau (Sumatra) – Indonesia (E), (7) Bukit Barisan Selatan (Sumatra) – Indonesia (R).
(E=elephants; R=rhinos)

By June 1999, and the start of FY2000, a comprehensive portfolio of activities, with workplans and budgets, will have been developed to initiate the new strategy in favor of Asia's elephants and rhinos.
This proposal targets the allocation of small grants from WWF-US to facilitate the identification of these interventions by the respective WWF offices.

Outputs with Targets
By 31 March 1999, concepts for each project site should be submitted to enable the Asia/Pacific program to market the strategy to potential donors and partners.
By 31 May 1999, full proposals for each site should be submitted to WWF-US and to WWF International's Species Conservation Unit, via the Asia/Pacific Program, using standard WWF formats.

These proposals should address preliminary stake-holder consultations, land-use assessments. and population status and distribution information on rhinos or elephants. The respective WWF range state offices at the December workshop highlighted the need for the identification of these interventions.

Activities with Indicators
A focal person from WWF offices in each range state office will take the lead in developing the concepts and full project proposals for the priority elephant or rhino populations identified by the workshop. The outputs of the December workshop will provide background information, approach strategies and proposal format.

Timetable
Activities under this concept are expected to start around 15 February 1999, pending approval at the Asia/Pacific Subcommittee meeting in Dalat. Vietnam, 4-8 February 1999.
Completion date is 31 May 1999.

Follow-Up Activities
The concepts and the detailed proposals developed will be integrated with proposals from the other 6 areas to form the basis for the overall strategy. Cross-cutting elements will also be added, as will marketing and communications strategies. It is intended to implement the strategy over a minimum period of five years.

Budget (figures are maximums):

WWF-Malaysia:	$US 20.000 (2 sites @ $US 10.000 per site)
WWF-Indonesia:	$US 2,000 (2 sites @ $US 1,000 per site)
WWF-Thailand:	$US 5.000
WWF-India:	$US 10,000 (2 sites @ $US 5,000 per site)
Total:	$US 37,000

Reporting:
Each range state will be responsible for providing the concept by 31 March 1999, the detailed proposal by 31 May 1999 and a financial report by 31 July 1999. together with a final report.

Project Supervisors: Ginette Hemley (WWF-US), John Newby (WWF International).

Project Executants: Sakon Jaisomkom (WWF-Thailand), Pramoj Tyagi (WWF-India), Nazir Foead (WWF-Indonesia), Dino Sharma (WWF-Malaysia).

Compiled by: Michael Stuewe, Isabelle Louis, John Newby
Technical advisors: Michael Stuewe, Eric Wikramanayake

Section 4 – Process Summary

4.1) Resource Documents:

The two draft action plans commissioned by WWF International – *The Asian Elephant: Priority Populations and Projects for Conservation* and *Rhinoceros Conservation in Asia: The Challenge for WWF* – were the fundamental reference tools used throughout the workshop's selection processes. A selection of supporting reference materials was distributed to all conference participants prior to assembling in HCMC.
These documents were:

1. *An Update on Asian Rhinoceros Trade Issues* and *An Update on Asian Elephant Trade Issues*, both prepared under the supervision of Steven Broad (TRAFFIC International) for this workshop.
2. IUCN SSC Asian Elephant Specialist Group's *The Asian Elephant: An Action Plan for its Conservation*, compiled by Charles Santiapillai and Peter Jackson in 1990 (included as a historical context).
3. IUCN SSC Asian Rhino Specialist Group's *Status Survey and Conservation Action Plan: Asian Rhinos*, compiled by Thomas Foose and Nico van Strien (1997). Includes the Specialist Group's recent efforts at priority-setting and their assessment of program / financial needs for Asian rhinos for the 1996-2000 period.
4. A copy of Charles Santiapillai's *The Asian Elephant Conservation: A Global Strategy*, printed in Gajah 18: July 1997, pp. 21-39. Reflects updated perspectives from the Asian Elephant Specialist Group.
5. *Gone Astray: The Care and Management of the Asian Elephant in Domesticity* (FAO, 1997), by Richard Lair.
6. *Wanted Alive! Asian Elephants in the Wild*, the 1995 WWF Species Status Report written by Elizabeth Kemf and Peter Jackson.
7. *A Review of the Status of Tiger, Asian Elephant, Gaur and Banteng in Vietnam, Lao, Cambodia and Yunnan, with Recommendations for Future Conservation Action* (WWF, 1998) compiled by J.W. Duckworth with assistance from S. Hedges.
8. *WWF's Action Plan for the Conservation and Management of Africa's Black (Diceros bicornis) and White (Ceratotherium simum) Rhinoceroses* (December 1997), compiled by the WWF Africa & Madagascar Programme.
9. *Alternative Strategies for the Recovery of Rhinoceros Populations* by Eric Dinerstein, chapter excerpt from *The Rhinos of Chitwan and the Recovery of Asia's Megafauna* – to be published by Columbia University Press.

Participants were asked to review all materials prior to attending the workshop, paying particular attention to the following issues:

- present distribution of each species;
- a basic threats/issues assessment for each significant population;
- current conservation efforts known to be underway or anticipated to begin shortly in those areas:
- selection criteria that WWF may be able to apply to populations/areas to set national and regional priorities;
- a context-specific list of ground-level activities for populations/areas identified to address identified threats (taking immediate and long-term needs into consideration; and a similarly analytical approach to trade issues).

4.2) Background Presentations:

- Each WWF office (defined here as a "range state" for the two species) presented a report on their knowledge and activities relating to rhinos and elephants within their country or region. These presentations equipped participants with ground-level information about such issues as capacity, government support, political and border issues, and other NGO activity in each range state.
  Salient points from these presentations (summed up by Michael Stuewe) were:

  1) Can the success with rhinos in Chitwan National Park be repeated elsewhere?
  2) Economic issues (agricultural development/mineral projects) in Peninsular Malaysia and Sabah overshadow the potential success of "landscape approach", compounded with a recent government directive to increase wildlife exports to help inflow of hard currency into Malaysia;
  3) Basic research surveys on ranging patterns and seasonal movements are needed;
  4) Reports of elephant poaching for meat (in Yunnan, China) are very disturbing.
  5) The importance of anti-poaching networks – across both rhino and elephant ranges – cannot be underestimated;
  6) CITES issues need to be discussed on a) international translocation/movements e.g. Thailand-Indonesia and b) to assess some range states' needs e.g. Vietnam, Malaysia;
  7) Enforcement of existing laws and compensation schemes need serious review;
  8) Elephant conservation may have to be approached differently to rhino/tiger conservation – greater numbers mean there is potential to take on greater challenges rather than simple population survival.

- Information on priorities and approaches was presented by members from the Asian Rhino Specialist Group (AsRSG) and the Asian Elephant Specialist Group (AESG):

  - Nico van Strien (AsRSG) summed up the approaches detailed in the IUCN SSC publication *Asian Rhinos: Status Survey and Conservation Action Plan* (1997). He added that while the WWF Draft Rhino Action Plan matches the goals of the AsRSG, the WWF plan is placing more emphasis on long-term viability whereas the AsRSG is addressing short-term necessities for survival – i.e. population stability before considering expansion.
  - Raman Sukumar (AESG) referred also to the IUCN SSC publication *The Asian Elephant: An Action Plan for its Conservation* (1990), which although outdated contains the kernel of the AESG approach. He stressed that the AESG was increasingly using its expertise to facilitate other NGOs and partners to do the work. To maximize the chances of long-term population persistence, there is a need for all interested parties such as AESG/WWF/FFI to communicate effectively.

- Issues and challenges facing long-term conservation of viable populations of the two species were addressed on four levels (with summary of salient points below):

  1) Illegal Trade – TRAFFIC presentations

  <u>* TRAFFIC East Asia (Judy Mills):</u>

  - The need to treat rhino horn and elephant ivory separately because different market demand (medicinal component vs. luxury item). Need for some ID to discriminate African from Asian ivory stocks; registration of domestic elephant ivory (e.g. in Thailand); Rhino horn still not banned in Japan and North Korea; North Korea has not acceded to CITES.
  - TEA has knowledge of market demand in Japan, Hong Kong, South Korea etc but lacks information on specific trade routes and whether any new stocks are being added.

- Sociological surveys would be useful to supplement market studies, with the aim of discovering attitudes to: wildlife in food; preference for Asian varieties of ivory/ rhino horn; REAL demand; consumer profiles.
- Poacher motivation – is it driven by demand; or hope that bans will be lifted; or by pest control; or merely opportunistic?

* TRAFFIC India (Manoj Misra):

- Long history of Indian ivory carving and import/export.
- Evidence in N-E India of elephant meat consumption and export.
- Use of rhino horn, urine, hide etc continues in traditional medicine.
- Activities focussed on controlling confiscated ivory stockpiles, rhino horns, monitoring trade routes, maintaining informer networks.
- Preparations for the limited release of African (Botswana/Namibia/Zimbabwe) ivory – in case the limited release sets off a renewed ivory market in India.
- Monitoring mechanisms must be put in place for Asian elephant poaching and ivory trade – but the question remains: how to apply the Monitoring the Illegal Killing of Elephants (MIKE) system to an Asian context?
- Just because Chitwan and Kaziranga are secure populations, these are vulnerable habitats that require vigilant monitoring.

* TRAFFIC Southeast Asia (Chen Hin Keong):

- At what point in the chain of wildlife trade exchanges should TRAFFIC intervene?
- Rhinos: horn not visible in trade in SEA; horns probably in limited circulation due to the small number of rhinos left, traded in restricted circles only.
- Elephants: traded live; ivory is legal under domestic Thai legislation but poached Myanmar ivory may be mixed in with Thai domestic/wild stocks; stockpiled ivory in Singapore, Thailand, < Malaysia, << Indonesia; not known if African elephant ivory is illegally entering the region; Mindanao (Philippines) as an ivory entrepot.
- Elephant meat consumption – report from Yunnan and also Cambodia has reported that live elephants are exported to satisfy Chinese demand for meat.
- The key issue is that both species are on Appendix I and yet domestic trade for ivory and rhino products is legal in some countries, hence, the need for management and enforcement. As a result, the WWF family could take a consensus position to ban all legal trade.

2) Development, Habitat Loss and Land-Use leading to Human-Animal Conflict

*Human-Elephant Conflict – An Overview (Michael Stuewe):

- Development, habitat loss, land-use conflict and poverty – all lead to human-elephant conflict.
- Elephants will try to get to resources, compete for "attractive food". This conflict will escalate with >attractiveness of food and as ratio of crops:range land increases.
- Mapping "conflict fires" will always show borders of elephant distribution matching up with fringes of human encroachment – but, food crops can be protected if there is enough range.
- Example: if existing habitat is surrounded by pineapples, sugar cane and bananas, these can be protected by electric fences and firecrackers. But if crops proliferate, then attractive food becomes essential food and conflict escalates.
- Corridors are feasible if land and money are available. If not, the options are to capture and/or cull populations. Captured elephants can be translocated (with difficulty), used for captive breeding, or put into permanent retirement. There is a potential overlap with eco-tourism use for properly trained individuals.

* Human-elephant conflict in Kodagu Wildlife Sanctuary – southern India (Raman Sukumar):

- Habitat edges promote conflict. With increasing fragmentation, more edges come into play.
- Transmigration is difficult – example from southern India of captured elephants, moved 120km only to return a few months later. Also, elephants moved to totally alien habitat may cause conflict immediately.
- Pressures such as habitat degradation etc contribute to the problem but ultimate cause is that elephants are after attractive food.
- Heterogeneity in foraging behavior: 1) males raid more than females; 2) very few individuals have tendency to rampage (2/600 in Indian study)

Mitigation Methods:

- Electric fences require strict monitoring and maintenance. In India, private ownership (user pays) increases maintenance efficiency whereas government constructed fences are often cut and the wire stolen under impression that the fence will be reinstalled next year.
- Trenches fail due to terrain constraints -- streams, trench walls – and that elephants will usually find a way to cross.
- Mechanical barriers (using old Indian Rail sleepers and rails) need to be tried.

* Habitat encroachment – Cat Loc Javan Rhino population (Nico van Strien):

- Encroachment has reduced range area over past 10 years – now approaching a non-viable situation: <population, <area, >encroachment.
- Either the people or the rhinos have to move.

Solution – Strict Protection (*in situ*) and/or Translocation:

- Habitat should be restored, core secured, 17,000ha set aside – all needs to be done in 2-3 years. Progress in core protection, perhaps fence off core habitat – and habitat restoration needs to be closely monitored.
- If no progress then move the rhinos to Cat Tien. Lack of roads, rugged terrain, 5-10,000 people living in corridor would necessitate moving rhinos by helicopter after site selection which would bring costs up to $2 million *(NvStrien, verbal estimate)*. Similar cost for translocating such a large amount of people.

* Protection and Expansion – The Ujung Kulon Javan Rhino population (Nico van Strien):
(following a series of project proposals listed by the AsRSG)

- Protection measures in use: gun control; law enforcement: isthmus protection zone 1km wide; coastal zone monitoring with patrol boats on northern bay approaches; intensive patrol zone on eastern coast of peninsula in "no-trail" area.
- Additional protection at proposed translocation facility along isthmus: a series of holding pens protected by secure fencing and vigilant patrol regime. Create temporary reception center that would minimize risk from transport and release usually involved in translocation (now at feasibility study stage with WWF/IRF/Indonesian government). If possible, would expand population into full range habitat available in Ujung Kulon. If not, simply remove the fences.
- Other translocation alternatives, such as Sumatra, are currently on hold due to lack of secure reception sites. Even if the focus is on creating a secure core area, Sumatra lacks public awareness, intelligence networks, direct contact with hunters and adequate law enforcement – the very components which have helped Ujung Kulon control its poaching problem over the past 20-30 years.

3) Anti-Poaching:

* Rhino Protection Units [RPUs] (Nico van Strien):

- Importance of RPU activity to protect rhino core habitat areas;
  - e.g. Gunung Leuser guard station without patrols – no-one went into reserve for six years (1984-1990). By the time patrols started to combat poaching, 50-70% of the

population had been wiped out. It will take 15-20 years to restore population to 1980 levels
  - e.g. Kerinci Seblat – since 1980, 300 rhinos have been poached by villagers. Perhaps 20 individuals remain.
- RPUs have operated in Gunung Leuser, Kerinci Seblat, Bukit Barisan Selatan for the past 3 years and Way Kambas for one year. All administratively independent, functionally under park management. Minimum requirements are 1-2 especially trained park guards plus 3 civilians. One RPU can cover 20,000ha under current levels of poaching and each costs $10-15,000 p.a.
- RPUs operate on six levels:
  1) Poaching prevention;
  2) Poaching information;
  3) Population monitoring:
  4) Prevention of illegal practice;
     - Wildlife monitoring;
     - Arrest trespassers.
- Potential of Way Kambas: It has no permanent encroachment, no poaching so far. It embraces a designated rhino sanctuary alongside an eco-tourism project, which could channel funds into the RPU for Way Kambas. In five years, the revenue from Way Kambas (assuming partial economic recovery) could sustain all RPUs in Sumatra. maybe all Indonesia.
- Success of Ujung Kulon (Nazir Foead): UK has managed to keep poaching to minimum levels – there has been little evidence in the past seven years. Three RPUs (each $12,000 p.a.) are now operating to anticipate poaching, addressing three tiers of activity: awareness, intelligence gathering and strict protection.
  (Note: In contrast, the annual cost of an RPU in Nepal is around $1,500, excluding equipment).

<u>* 1998 AsESG meeting in Bangalore to discuss impact of CITES decisions on ivory trade</u>
(Thomas Mathew)

- first ever meeting organized by the AsESG on poaching and ivory trade, prompted by the need to establish CITES-mandated systematic international monitoring of trends in poaching of Asian elephants and trade in Asian ivory.
- As a result of decisions taken at the 10th meeting of the Conference of Parties to CITES (Harare, 1997) to permit the transfer of the African elephant populations of Botswana, Namibia and Zimbabwe from CITES Appendix I to Appendix II. Approval was granted for limited commercial trade (under certain conditions) in raw ivory from these countries to Japan in 1999 (Decision 10.1). It was also decided to allow registration and disposal of ivory stocks from other African Elephant Range States (Decision 10.2).
- as condition of trade or sale under these conditions, systems must be developed to monitor levels and trends in hunting and trade, in elephant range states and entrepots, to assess the impact of the CITES listing change.
- The site-based Monitoring the Illegal Killing of Elephants (MIKE) system was assessed to be inapplicable to Asian range states. As only 15 sites spread across Asia were proposed to be monitored and that data would be inconclusive in detecting any real trends in illegal killing of elephants.
- MIKE system should be considered a long-term monitoring mechanism, with limited value at a national level, and unable to provide scientifically valid information to CITES in regard to a causal link between the COP 10 resolutions and their impact on Asian and African wild elephant populations
- It was recommended to apply the precautionary principle when weighing considerations related to the reopening of the trade in ivory.

4) Conservation and Welfare of Domestic Elephant populations

*Domestic Elephants – Conservation and Animal Welfare Issues (Richard Lair):

- 16,000 Asian elephants held in captivity with little space and few resources.
- Macro level plan to deal with captive/domesticated populations can best be handled by the likes of WWF. Link between WWF/AESG and other such agencies is science – which enables crucial choices to be made on long-term implications, national and species levels and population biology. This big-picture strategy is essential. The maintenance of populations will rely on the likes of WWF and wildlife biologists more so than captive elephant experts.
- At present, elephant welfare is all tactics, no strategy. Example: Thailand has 5 NGOs working with domestic elephants. Each NGO runs its own database, with no consideration of a national database, let alone an international one. There is a compelling need for an all-Asia registration book for captive elephants.
- Captive population demographics usually indicate population declines. Example: Burmese timber camps where births do not match deaths because of high mortality rates.
- Relocation of captive elephants to address population deficiencies elsewhere is hampered by CITES regulations.

* Elephant Re-Introduction in Thailand (Grishda Lungka):

- 3000 captive elephants in Thailand – logging ban leaves 2000 elephants out of work, although some elephants may be used for illegal logging practices.
- Lampang re-introduction project has 600 sq. km with release sites chosen.
- Semi-wild initial release: work during the day, wild feed at night.
- Released 5 females so far (30-50 years old, close to menopause); will release adult males soon to study reproductive herds.

* Sumatran Elephant camps (overview by Michael Stuewe):

- *History:* Human transmigration in the 1960s from Java to Sumatra increased human-elephant conflict. Increasing human population pressure caused rapid rise of conflict.
  Attempted Solution: WWF supported establishment of camps to train elephants for use in sustainable logging programs.
- *Result:* WWF project ended; logging programs never started; conflicts remained; captures continued; elephant camps became "concentration" camps.
- Thai elephants and mahouts were invited to Sumatra to help the situation and were subsequently thrown out.

*WWF Indonesia camp survey, 1998 (Ron Lilley):

- 422 elephants total in five camps (figures doubtful) – all camps are stocked over capacity. No coherent plan exists for elephant translocations to relieve pressure on some camps.
- Economic crisis has pushed up food and medicine costs for elephants; camp budgets cut for 1999; civil unrest in Indonesia means that the little income from visitors/tourism to the camps has now disappeared.
- Lack of information from local administration on how to find the camps, so do they have a legitimate tourism purpose?
- Staff Problems: low mahout wages, negative attitudes, frequent elephant escapes.
- Diseases a problem, veterinary resources stretched.
- Food and water supplies are lacking.
- Births are rare, young elephants may die very quickly if born at all.
- Ivory issues: tusks are cut in camps; ivory stockpiles stored in regional offices (taken from live and dead elephants).

* Surin (Thailand) interviews with Thai mahouts expelled from Sumatran camps (Richard Lair):

- Captures of wild elephants from Sumatran forests are continuing.
- Thai eyewitness reports of 60% (12 individuals our of a group of 15-20) mortality after bringing elephants to camps from forest, perhaps more died in the forest.
- Deliberate tusk hunting – tusks cut so high, elephants often die of systemic blood poisoning (bacterial infection).
- Indiscriminate use of tranquilizers when capturing elephants/cutting tusks.
- Collars of wood, wire and nails instead of noose tethers around feet.

- A Landscape Approach to Conservation was presented as a crucial filter for selecting WWF priorities. Participants were reminded of the following key components of a landscape approach:

  - Expanding existing reserves and creating new reserves where possible;
  - Linking proximal protected areas;
  - Buffer-zone management that provides benefits to the local communities from natural resources and encouraging low-intensity land-uses that are compatible with wildlife use and dispersal;
  - Invoking the traditions of local people that once enabled a relatively benevolent co-existence with wildlife.
  - Landscapes include: Core Areas; buffer zones; corridors – essential for dispersal and breeding; configuration of core areas; land-use in surrounding areas.
  - Habitat blocks include important features across a pattern of succession: Forest gaps; grasslands – ideally *Saccharum spontaneum* (for Greater One-horned Rhino); refugia – upland areas in times of flood; presence of lowland forests.
  - Fair resettlement of villages in park areas should not be forgotten.
  - Rhino and Elephant conservation is fundamentally linked to Eco-Region Based Conservation. First priority should be to save the source pools through strict protection of core habitat for future restoration, which will in turn expand the conservation effect and eventually maintain or recreate connectivity within the landscape.

4.3) The Workshops:

- Methodology:

  1. Priority setting guidelines were given as suggested filters for selecting populations.
  2. Examples from Elephants and Rhino populations were sketched out to reinforce what issues needed to be considered for long-term goals.
  3. Participants were divided into three bioregional groupings: South Asia; Indochina; Southeast Asia.
  4. The three-tier workshop structure allowed for initial selections to be reconsidered in the light of existing threats and issues in each area before the feasibility of each population site was mapped out within each bioregion.
  5. The resulting list of priority populations (see Section 2 – Workshop Outputs) across the two species' ranges revealed two extremes: the relatively high populations and well-studied habitats in India/Nepal, through to a general lack of information and low population estimates of Indochina. In between were habitats in Malaysia and Indonesia, the analysis of which benefited greatly from having

highly informed resource people available at the workshop – allowing problems of habitat fragmentation, small population and core-area security to be addressed in detail.

6. Discussions allowed further details within each bioregion to be cross-examined.

*Workshop 1

Identifying National, Regional, and Network Priority Populations and Landscapes:

- Each bioregional group was asked to select three populations of each species that should be priorities for WWF attention.

SOUTH ASIA

Greater One-Horned Rhino

1) Central Terai RCU – Chitwan/Parsa/Valmiki;
2) Western Terai RCU – Bardia/Dudhwa:
3) Brahmaputra Valley – Kaziranga-Karbi Anglong.

Asian Elephant

1) Nilgiris-Eastern Ghats:
2) Kaziranga/Karbi/Anglong;
3) Buxa/Manas/Bhutan

– Historical rhino range: terrorism considerations;

(4) Western Terai elephant corridor with Rajaji/Corbett).

INDOCHINA

Javan Rhino

1) Southern Indochina RCU – Cat Loc/Cat Tien (Vietnam)
   (2^{nd} Rhino Population – survey priorities:
   a) Phu Kheio Wildlife Sanctuary
   - survey needed to verify Sumatran rhino tracks. WWF already there for Tiger:
   b) Tenasserim/Western Thailand
   - possible populations of Sumatran/Javan Rhinos – survey needed).

Asian Elephant

1) Tenasserim (Southern Myanmar and Western Thailand);
2) "Emerald Triangle" (+Xe Sap[Laos]):
3) Yunnan/Northern Laos

- Priority for biodiversity conservation in general; opportunity to engage China:

4) Annamite mountains (Laos/Vietnam)

- Vietnam: WWF in Vu Quang/Phong Nha Nature Reserves. Laos: Nam Theun II dam has caused habitat fragmentation; WCS/IUCN have existing projects in the area.

SOUTHEAST ASIA

Sumatran Rhino

1) Kerinci Seblat – scattered population, possible translocation site;
2) Bukit Barisan Selatan – well protected core area;
3) Sabah – elephant overlap, rich biodiversity;
4) Taman Negara – elephant overlap. Malaysia population could connect across border into Thailand.

Javan Rhino

1) Ujung Kulon – core area protection; identify areas for translocation

Asian Elephant

1) Taman Negara – with overlap into Thailand, population around 1000;
2) Sabah – good working set-up with authorities; also important to Rhinos;
3) Riau (Sumatra) – surrounded by logging concessions. biologically distinct populations, Kerinci Seblat important for rhinos;

(Ideal program in terms of long-term persistence would be the Gunung Leuser population in Sumatra but long-term EU project means WWF resources may not be needed; Way Kambas (Sumatra) was also considered as a program of best fit, and eliminated also on the basis of current level of activities by other agencies.)

*Workshop 2

Threats and Issues: Delineating Methodologies for Action

- Participants were asked to decide what *methodologies* make sense to support the conservation of rhino and elephant landscapes identified in Workshop 1. Each group was directed to identify what efforts are already underway in their countries/bioregions (including non-WWF efforts), and what priority gaps there are for rhino and elephant conservation. Project components were aimed at both local and remote threats to rhino and elephant conservation and note overlap whenever it occurs.

SOUTH ASIA

- **Considerations:**

  1) capacity to implement;
  2) political aspects;
  3) actions in place already;
  4) partnership potential;
  5) potential impact of WWF involvement:
  6) contribution to overall policy work of WWF;
  7) contribution to preventative conservation measures;
  8) sustainability.

- **Threats:**

  Low. Medium. High - measured on immediacy; intensity; scale

  Elephants:
  1) habitat conversion;
  2) habitat fragmentation – prime issue:
  3) wildlife exploitation – poaching. capture;
  4) human-elephant conflict;

Threat / Issue	Nilgiris	Kaziranga	Buxa/Manas
1	L	M	M
2	H	H	M
3	H	M	M
4	H	H	H

- **Priority targets for elephants:**

Population/Targets	1	2	3
1. Nilgiris	Maintain habitat connectivity throughout range	Improve sex ratios in relevant part of range	Reduce elephant-human conflicts
2. Kaziranga	Establish/strengthen Kaziranga/Karbi connectivity	Establish Karbi-Anglong habitat security	Reduce human/elepant conflicts
3. Buxa-Manas-Bhutan	Transboundary co-operation		

- **Threats – rhinos:**

1) habitat conversion;
2) habitat degradation – prime issue;
3) poaching:
4) small population size:
5) conflict.

Threat/Issue	West Terai	Central Terai	Brahmaputra
1	M	L	H
2	H	H	L
3	M	M	H
4	H	L	L
5	L	L	L

- **Priority targets for rhinos:**

Population	1	2	3	4
Central Terai	1000 individuals in 2010	Habitat restoration of 60% buffer zone to natural conditions	Translocation	Increase benefit to community
Western Terai	Bardia population to 100; Dudwha population to 50; Sukla Phanta / Corbett establish Founder population	Habitat restoration in Bardia buffer zone	Increase help to locals	
Brahmaputra Valley	Secure access to Karbi/ Anglong habitat	Maintain stability of population		

INDOCHINA

*Javan Rhino – Cat Tien/Cat Loc – Vietnam

- **Threats and Issues:**

1) Agricultural encroachment – although illegal in a Protected Area, there is in-migration of ethnic groups;
2) Administration – Cat Tien/Cat Loc (5-6,000 hectare core area) spans three provinces, therefore consensus will take time. Provincial authorities have mandate, not WWF, so it is essential to use existing structures to influence decisions;
3) Protected Area Management – Park borders need to be secured. The lack of guards, patrols, education needs to be acted on;
4) Conflicting land-use policies;
5) Habitat Fragmentation and corridor settlement;
6) Landscape needs to be secured;
7) Rhino population demographics and genetics are still unknown;
8) Rhino translocation – consider strategy for Cat Loc/Cat Tien context if necessary;
9) Poaching – needs monitoring although the last known incident was in 1989.

- **WWF Now** – (under current ICDP program)

1) Capacity-building – guard stations, transport, infrastructure;
2) Training;
3) Rhino population surveys and monitoring;
4) Community education and income-generating activities in the buffer zone;
5) *(near future)* Reforestation plan for Cat Loc
6) (March 1999) Chitwan exchange – take staff, policy makers to Nepal

- **Further Needs:**

Priority:
Short term – RPU type corridor protection – more staff would address in-migration. Government commitment to funding is lacking, thus need to kick in emergency funds.
Long-term vision – Corridor establishment and maintenance
Other issues:

1) Re-settlement policy must be formulated to include both Kinh (dominant Vietnamese ethnic group) and minority peoples in the park;
2) Genetic information from dung samples or photo traps;
3) Maintain the public awareness of rhino population value in Cat Loc among Vietnamese and in consumer countries;
4) Resolve land-use policy differences –e.g. buffer zone needs clarification;
5) Confirm mandate of forest guards – does it extend beyond park boundary?
6) Conservation education;
7) Sustained funding to ensure work can continue beyond ICDP project run;

8) Cat Tien carrying capacity must be addressed (50 year vision)

***Asian Elephant: – Tenasserim – Western Thailand/Southern Myanmar**

- **Threats and Issues**

1) Logging – More a problem in Myanmar than in Thailand:
2) Ivory and Timber Trade – driven by Myanmar;
3) Thai domestic law that ivory from domesticated elephants can be sold:
4) Poaching;
5) Habitat damage from fires;
6) Human elephant conflict:
7) Domestic elephant population:
8) Lack of government funding:
9) Administration – Western Forest Complex (WFC) extends across 9 provinces, and has >50 NGOs already running projects there;
10) In-migration and agricultural encroachment – both have stabilized but should be monitored.

- **WWF Activities Now**

1) Environmental education and training;
2) Human-elephant conflict study:
3) Species surveys – otter, Green Peafowl, herbivores, Leopard, Tiger, Wild Buffalo:
4) Wildlife Trade study;
5) Support to WFC Action plan:

- **Further Needs**

1) Complete Action Plan from Thai side, obtain corresponding Myanmar data;
2) Range patterns information:
3) Better patrolling;
4) Improve Myanmar-Thai relations; push Myanmar to join CITES;
5) Analyze problems of domestic elephant population;
6) Trade Issues: assess poacher motivation; address legal classification of domestic ivory; better regulation of domestic markets; how to identify ivory, both splits Asian/African (possible) and domestic/wild-sourced (unlikely): examine issues of consumer preference;
7) WWF Thailand to do a problem analysis tree to examine further WWF involvement in WFC.

***Asian Elephant: – "Emerald Triangle" – Vietnam/Laos/Cambodia**

- **Threats and Issues**

1) Unsustainable levels of logging (both illegal and legal);

2) Wildlife Trade – levels of elephant products unknown at this stage;
3) Poaching;
4) Porous borders in all countries, compounded by lack of staff;
5) Lack of management: minimum level in Vietnam (nature reserve), "paper park" in Laos (Nam Khong provincial protected area), "birth-level" management in Cambodia;
6) Potential landscape fragmentation;
7) Military presence along all border areas;
8) Inadequate financial resources;
9) Unbalanced power base between military and provincial authorities.

- **WWF Activities Now**

  - Cambodia: Virachey park management; very basic training and *per diem* staff payments, equipment, in-situ project manager from WWF;
  - Laos: project development funded by WWF Germany;
  - Vietnam: tiger conservation activities.

- **Further Needs**

1) Capacity building – grass roots Protected Area development;
2) Secure landscape within a tri-national land-use plan;
3) Survey population movements and assess habitat to determine range patterns of elephants;
4) Trade monitoring – develop a network across three countries to track trade dynamics;
5) Investigate poacher motivation.

SOUTHEAST ASIA

*Asian Elephant+Sumatran Rhino: Taman Negara (Peninsular Malaysia with extension into Thailand)

- **Goal/Target for core area** - Keep Taman Negara National Park secure

- **Threats/Needs to core area**

1) Too many elephants because of translocations: elephant surveys desperately needed: translocations need to be evaluated;
2) Poaching of rhinos/elephants by Thai nationals;
3) Lack of integrated monitoring of park management e.g. tourism might increase too much; lack of general co-ordination.

- **Current projects (WWF and others):**

1) GEF rhino project on RPUs

2) DWNP/SI elephant project to evaluate translocations
3) DWNP/WCS/WWF/University of Florida tiger project on habitat assessment, ecological surveys, education awareness
4) WWF project Forest for Water – Water for Life on water catchments and habitat management in the main range – Eco region (30)
5) DWNP/Industry Elephant tourism assessment
6) GTZ sustainable forest management project and recommendations

- **Goal/Target for wider area**

  Expand conservation area status northwards into forest reserves.

- **Threats/Needs to wider area**

  1) State forest reserves are already marked for logging:
  2) Poaching of rhinos/elephants by Thai-based poachers:
  3) Assess potential corridors between HalaBala, Belum, Taman Negara:
  4) Predict agricultural threats 5-10 years down the road;
  5) Conflicting land-use, plans and activities;
  6) Extract elephant data from past RPU surveys.

<u>*Asian Elephant and Sumatran rhino – Borneo [Sabah/Kalimantan] (Tabin-Danum-Maliau-Ulu Sembakung blocks) – Malaysia/Indonesia</u>

- **Goal/Target for core area** - Secure core areas

- **Threats/Needs to core area**

  1) Core areas surrounded by commercial forest areas;
  2) Logging is being pushed to bring hard currency into Malaysia:
  3) Degraded habitat areas are being pushed for immediate conversion to "pulp" acacia and oil palm.

- **Goal/Target for wider area** - Protect existing corridors between core areas.

- **Threats/Needs to wider area**

  1) State needs money, logging is done faster. Areas degraded from logging are being pushed for immediate conversion to "pulp" acacia and oil palm;
  2) Review 10-year-old map of area and update with current land-use information.
  3) Map elephant movements to determine habitat needs;
  4) Population distribution surveys:
  5) Identify areas to receive trans-located herds;
  6) Extract elephant data from RPU past surveys
  7) Transborder overlap with Indonesia – may be rhinos at Sabah / Sarawak / Kalimantan junction, which is within elephant range. Block must expand to include all of this range;

- **Current projects (WWF and others)**

1) SWD: Translocations of pocketed herds into area;
2) WWF: integrity of land/habitat outside PA / oil palm plantations;
3) GEF/SWD: Rhino project (RPUs):
4) SWD: rhino captive breeding program:
5) WWF: 98 Forest fire impact assessment.

***Asian Elephant - Riau – Sumatra, Indonesia**

- **Priority** – identify conversion forests that exist now because they are targets for human transmigration.

- **Goal/Target for core area** - Secure core areas.

- **Threats/Needs to core area**

1) Illegal logging inside Bukit Tigapuluh:
2) Encroachment by farmers, oil palm plantations surrounding core area (cut forest / conversion);
3) Illegal logging, encroachment, poaching, more people in Kerinci:
4) Assessment of poaching pressure:
5) Law enforcement, compensation scheme for farming alternatives;
6) Assessment of scale of illegal logging in NPs.

- **Goals/Targets for wider area**

1) Define broader landscape land-use schemes;
2) Identify conversion forests as they may be new transmigration sites.

- **Threats/Needs to wider area**

1) Second wave of transmigration into conversion forests:
2) Elephant distribution surveys:
3) Compile capture/conflict data from training centers and district forestry offices;
4) Extract elephant data from RPU past surveys:
5) Determine rhino distribution outside Kerinci.

- **Current projects (WWF and others)**

1) WWF: awareness environmental education local population (Bukit Tigapuluh);
2) WWF: Community Development project;
3) WCS: tiger project;
4) WWF: ICDP project in Kerinci;
5) GEF: rhino project (RPUs), WWF 1999-2000;
6) FFI: Orang Pendek project, other surveys:

7) FFI: elephant camp projects (2?):
8) Indonesian Govt.: Planned relocation/release of elephant into Bukit Tigapuluh from Riau ETC to a proposed ETC at Sebangau near Rengat, a major conflict site;
9) WWF: GIS data for core areas.

***Sumatran rhino – Bukit Barisan Selatan (Sumatra, Indonesia)**

- **Goal/Target for core area** - Secure core areas.

- **Threats/Needs to core area**

1) Habitat Fragmentation;
2) Poaching;
3) Encroachment:
4) Human transmigration;
5) Stronger enforcement, more RPUs:
6) Survey in northern part of national park.

- **Goals/Targets for wider area**

1) Expand conservation area across broader landscape.

- **Threats/Needs to wider area**

1) Assess expansion possibilities to the North.

- **Current (non)-WWF projects**

1) GEF/IRF RPUs;
2) WCS – field station and surveys.

(NB: Ujung Kulon Javan Rhino population was not able to be analyzed within the time constraints of Workshop 2)

*Workshop 3 – Drafting the Projects Matrix

Directive to Workshop Participants: Fine-tuning WWF and TRAFFIC approaches for conserving Asian rhinos and elephants by creating a matrix that outlines *each issue/project/landscape* deemed to fit the priority timeframes and that provides *reasonable estimates as to the costs associated with the corresponding project needs.* Attempt *to list financial resources committed to specific efforts* (at least to the urgent priorities) wherever possible. Each priority should have an *assigned WWF point-person to coordinate follow-up.* A *time period* should be listed- when the work will start and how long it is likely to take. A Projects Matrix should be considered a living document, one that WWF will use over the next 5 years.

[Matrices resulting from Workshop 3 are compiled separately, along with maps showing locations of each priority population.]

Section 5 – Appendices

5.1) Extracts from the two WWF-commissioned Draft Action Plans

a) Rhinoceros Conservation in Asia: The Challenge for WWF

Prepared by Eric D. Wikramanayake (Senior Conservation Biologist) and Eric Dinerstein (Chief Scientist), WWF-US Conservation Science Program

EXECUTIVE SUMMARY

Over two decades of conservation efforts to increase the populations of the three highly endangered species of Asian rhinoceros have been largely unsuccessful. With the exception of the Greater one-horned rhinoceros populations in Kaziranga and Chitwan national parks in India and Nepal, respectively, all of the other rhinoceros populations have been in decline, or at best, shown no significant increase in numbers despite being in protected areas.

Large mammals, including rhinos, are wide-ranging and require extensive habitat areas to support viable populations. Thus, it is possible that several of Asia's relatively small protected areas are now at carrying capacity, and by themselves are unable to provide the adequate ecological resources necessary to support larger populations. Fragmentation of natural habitat and insularization of reserves which were once set within large habitat landscapes now leave little hope of matching the expansive protected areas of Africa. However, a landscape approach to conservation that includes: 1) expanding existing reserves and creating new reserves where possible; 2) linking proximal protected areas; 3) buffer zone management that provides benefits to the local communities from wildlife conservation and from other natural resources, and encouraging low-intensity land-uses that are compatible with wildlife use and dispersal; and, 4) invoking the traditions of the local people that once enabled a relatively benevolent coexistence with wildlife, can be Asia's surrogate to the vast reserves of Africa.

The Chitwan rhino conservation experience shows that a comprehensive conservation program built around strict protection of source populations can make effective rhino conservation outside protected areas possible. Because of buffer zone activities that have brought benefits to the local communities around Chitwan National Park from the presence of rhinos and other megavertebrate species, wildlife is not merely tolerated, but their presence is actually encouraged - such is the change in attitude.

As the world's largest and foremost conservation organization and advocate, WWF has charted a new course in conservation that emphasizes a holistic, landscape approach to conservation. We suggest that WWF's species conservation program can be most effective by focusing conservation resources in key areas within the overall landscape conservation framework, rather than by supporting largely unrelated projects in many areas. To this end, we have identified several conservation landscapes or Rhino Conservation Units (RCUs), to enable long-term conservation of the three species of Asian rhinoceros. The RCUs are: the Southern Brahmaputra Valley RCU, Jaldapara-Manas RCU, and the Central and Western Terai RCU for the Greater One-horned rhinoceros; Ujung Kulon RCU and Southern Indochina RCU for the Javan rhinoceros; and Gunung Leuser RCU, Kerinci Seblat RCU, Barisan Selatan RCU, Taman Negara-Belum RCU for the Sumatran rhinoceros.

We then prioritized among these RCUs to create a small portfolio of RCUs representative of the three species for WWFs international rhino conservation efforts. These consist of three Priority I RCUs, (Central and Western Terai RCU, Southern Indochina RCU, Ujung Kulon RCU, and Kerinci Seblat RCU), and two Priority II RCUs (Southern Brahmaputra Valley RCU, and Barisan Selatan RCU). We have selected both known populations of the Javan rhinoceros as Priority I because of the limited options for conservation of this species.

Finally, we present a set of criteria that can be used to evaluate and prioritize conservation project proposals within these RCUs on the basis of their urgency to secure and protect rhinoceros populations for long-term conservation. We emphasize, however, that this portfolio of conservation landscapes is for WWF's international conservation programs and is not meant for the national offices and programs which should prioritize and continue to focus on conservation areas within their respective countries and regions.

INTRODUCTION

The three species of Asian rhinoceros are among the most endangered mammal species in the world. Poaching of rhinoceros for the much-valued horn for use in the oriental medicine trade and large-scale habitat loss throughout their ranges have been the primary causes of population declines (Laurie 1978, Rabinowitz 1995, Menon 1996, Dinerstein in prep). Today, the three species of Asian rhinoceros, which were once widely distributed, are restricted to a few small protected areas.

Over two decades of conservation efforts to arrest and reverse the population declines even within the protected refuges have been largely unsuccessful (Rabinowitz 1995, Dinerstein in prep). But two notable exceptions stand out - the Greater one-horned rhinoceros in Kaziranga National Park in northern India and Chitwan National Park in Nepal have been brought back from the brink of extinction. Thus, it is time to take careful stock of conservation efforts to date and learn from the more successful programs. WWF, as the world's largest and foremost conservation organization, should take the initiative in adopting new approaches that incorporate these successes to further rhinoceros conservation.

Charismatic megavertebrates raise consciousness of conservation needs. Many of these megavertebrates are also keystone species that play a critical role in the ecosystems of which they are a part (Dinerstein and Wemmer 1988, Dinerstein 1991, Schoenwald-Cox et al. 1991, Wilcox 1984, Wikramanayake et al. 1998), or are wide-ranging umbrella species whose conservation requirements encompass the conservation requirements of smaller species and species assemblages (Owen-Smith 1988, Noss 1990, Schoenwald-Cox et al. 1991, Wilcox 1984, Wikramanayake et al. 1998, in press). These species are thus used as focal species in conservation programs; both for conservation management planning and for fund-raising. In Asia, the distributions of many megafauna species overlap, and a species-oriented, project-based approach will result in redundant funding. For instance, a project to strengthen the staff capacity in a protected area funded under a rhinoceros conservation program might also be funded through an elephant and/or tiger program, unless there is a coordinating mechanism to prevent such redundant funding. The low absorptive capacity in many governmental organizations will invariably result in these extra funds being misspent and will actually be detrimental to the function of the departments. Since conservation dollars are a limited commodity, it is essential that funds are wisely and effectively spent.

Thus, a holistic species conservation program will: a) help to conserve Asia's diminishing natural habitats by raising conservation consciousness; b) help to secure adequate habitat areas required for long-term, *in situ* conservation of large vertebrates; c) maintain the integrity of ecological communities by conserving functional ecosystems; d) enable more efficient use of scarce conservation resources.

We suggest that WWF's rhino conservation program identify areas with the greatest potential for long-term conservation, and take on a programmatic approach by:

1. reviewing past successes and failures, adopting and adapting the successes, and discarding the failures;

2. identifying a manageable portfolio of conservation areas with the potential for long-term rhinoceros conservation and directing conservation resources to these areas, rather than attempting to fund a number of projects in several areas with no target-driven, long-term objective;

3. prioritizing projects in these select areas using criteria that identify their urgency in contributing to a long-term conservation program.

WWF has already begun a process of objective allocation of conservation resources into a few important conservation areas (see Olson and Dinerstein 1998, Dinerstein et al. 1997). WWF, in partnership with the

King Mahendra Trust for Nature Conservation and the Nepal Department of National Parks and Wildlife Conservation, has also been involved in implementing one of the success stories in rhino conservation - the Chitwan project (Dinerstein in prep) - which provides many lessons for a good rhinoceros conservation program in particular and for megafauna in general.

We recommend that WWF's species conservation program conform to the organization's newly- charted course in conservation and integrate into a programmatic approach in a few focal areas. This will allow WWF to:

- focus its resources wisely and more effectively;
- provide expertise and technical assistance more strategically and effectively;
- and be able to influence the course of conservation and conservation approaches through successful conservation programs.

b) The Asian Elephant: Priority Populations and Projects for its Conservation

Prepared for WWF-US by Raman Sukumar, IUCN SSC Asian Elephant Specialist Group

INTRODUCTION

The Asian elephant (*Elephas maximus*) is a priceless biological and cultural heritage. It has been an integral part of the culture, religion and economy of the Asian peoples for at least 4000 years. It is a keystone biological species in the tropical forests of Asia. The conservation of the Asian elephant in the wild and in captivity would thus promote harmony between human development and nature and in conserving the rich bio-diversity of the South and Southeast Asian region.

Ironically, this charismatic species today faces a serious crisis that is largely unrecognised by the global conservation community. Elephant populations have declined substantially in all countries, with the possible exception of parts of India, during the past few decades. Even in India, the species has lost ground in the northeast, while in the south poaching for ivory threatens the genetic viability of the population. The population of Asian elephants today stands at between 35,000 and 50,000 in the wild with an additional 15,000 in captivity, a total population which is less than 10% of its much publicized cousin, the African elephant (*Loxodonta africana).*

Historically, the major causes for the decline of the Asian elephant have been capture for domestication and loss of habitat in the face of the expanding human population. Even today, the unsustainable capture (often illegally) continues in some countries, while human expansion continues to reduce and fragment the forest habitat, constricting elephant populations to small numbers which cannot survive in the long-term. Elephants inhabit some of the richest habitats in terms of bio-diversity in south and Southeast Asia. In these countries, the elephant habitat ranges from dry tropical thorn forest through deciduous forest and floodplains of rivers to tropical rain forest. These include, for instance, the following biodiversity rich regions:

Western Ghats in southern India

Eastern Himalayas in NE India, northern Myanmar, Laos and
Yunnan in southern China
Rain forests of Sumatra, Peninsular Malaysia and Sabah
Tropical forests along the Laos and Vietnam borders where new species of mammals are still being discovered.

The largest surviving wild populations are in India (20,000-25,000), in particular in the northeastern states of Arunachal Pradesh, Assam and Meghalaya, and in the Western Ghats of southern India. There may be 2800-4,800 elephants still left on the island of Sumatra (Indonesia), with other major populations occurring

in Myanmar (5,000-6,000), Sri Lanka (2500-3,000), Thailand (about 2000), Laos (1000), Cambodia (<1000), Vietnam (175-400), Peninsular Malaysia (1,000) and Borneo (500-2,000).

The conservation of elephant populations in these countries is thus intimately tied up with the conservation of overall biological diversity. Elephants need large amounts of space for the long-term conservation of viable populations. Their optimum habitat is a mosaic encompassing different vegetation types. Properly designed areas for elephant conservation would have to be biologically diverse.

Flagship species have been used successfully for the conservation of overall bio-diversity. An example is the success of Project Tiger launched in India in 1973, which protects not only the tiger itself but a diversity of species in the former range. India also launched Project Elephant in 1992 to cover the major elephant habitats in the country. The flagship species approach to conservation is still valid in regions where biodiversity is a relatively vague concept. Flagship species are typically charismatic species, attractive to people, evoke sympathy to their plight, and whose survival promotes the conservation of a variety of other creatures. An ideal flagship should also be one which has direct significance to human affairs and whose conservation involves promoting the economic development of human communities, now recognized as holding the key to conservation in bio-diversity-rich developing countries. The elephant goes a step even further in that it is a powerful religious and cultural symbol over much of its range in Asia.

THE ULTIMATE FLAGSHIP SPECIES

Many species are claimed to be flagships for broader conservation concerns. But for no species can a more convincing claim be made in this regard than the Asian elephant *Elephas maximus*. Consider the following aspects:

- The Asian elephant has a centuries-old cultural and religious significance among people (Hindu and Buddhist cultures) that is unmatched by any other species of animal in the world.

- The conservation of viable populations of the Asian elephant depends on the maintenance of large tracts of tropical and sub-tropical forests, which are essential for the survival of many other species in Asia.

- Human-wildlife conflicts, with particular emphasis on the elephant, are on the increase all over Asia. The development of techniques to manage such conflicts would lead directly to improving the standard of living of local human communities and build much stronger local support for elephant conservation in most Asian countries.

- The elephant is an essential element of the traditional forest management systems of many parts of Asia, and the continued economic viability of sustainable tropical timber harvesting depends on the maintenance of captive elephants.

It is clear, therefore, that the Asian elephant is the ultimate flagship species, representing a very broad array of human and environmental interests. Unfortunately, it is a flagship that is fast disappearing.

The Asian elephant today needs substantial international assistance for its continued survival in the wild and in captivity. In this document, I first outline broadly the issues, which are the most relevant to the long-term conservation of the elephant. This is followed by brief assessments of the most important elephant population across Asia. Some of this background has been developed in the course of meetings of the IUCN/SSC Asian Elephant Specialist Group. For several of these populations, I then provide a list of specific priority projects, which would go a long way towards addressing the short and long term needs of the elephant in Asian countries. The conservation of the elephant across Asia obviously calls for a large investment to fulfil the short and long term needs. I have thus specifically selected these projects for suitability for funding by WWF.

1. Survey and establishment of important elephant reserves in South and Southeast Asia

The establishment and protection of large natural areas throughout Asia is obviously the most important goal of elephant conservation. Project Elephant launched by the Indian government in 1992 is a good example of how a network of large managed "elephant ranges" can potentially satisfy the goal of conserving not only the elephant but also the overall bio-diversity of a country.
In order to ensure the long-term survival of important elephant populations, every country should develop a network of protected areas which are linked by buffer zones of multiple use that are compatible with the demands of elephants and other wildlife. Some of these reserves may be trans-frontier reserves. Within these Important Elephant Reserves (IER), human activities such as low impact shifting cultivation, controlled livestock grazing, subsistence hunting and gathering, sustained-yield forestry and extraction of non-timber products may be permitted, if appropriate, in the buffer zone areas between or around the wholly protected core areas.

In selected countries, the following activities need to be undertaken:

1. Surveys have to be carried out of priority elephant areas for mapping elephant distribution, land-use, vegetation, etc. at 1: 250,000 or another feasible scale, with the help of satellite imagery, paying particular attention to fragmentation of habitat and possibilities of establishing corridors for elephant movement.

2. Carry out elephant censuses in each IER, using modern census techniques. Where possible, data on population structure and sex ratios have to be gathered in order to properly assess the demography and viability of the populations.

3. Develop a central database and regional databases, using a Geographical Information System, and make it available to administrators and researchers in the Asian region.

2. Establishing corridors for elephant movement: securing private lands

Habitat fragmentation and the isolation of elephant populations are one of the most serious problems facing the elephant in Asia. Such small, isolated populations are in danger of erosion of genetic variation and may be not viable in the long term. Fragmentation also increases the conflict between elephants and agriculture. Corridors for the free movement of elephants are therefore essential for the long term viability and conservation of the species.

In several instances, an important corridor may not be controlled by the government but in the hands of individuals or local village councils. There is scope for purchase of such critical habitats for setting up as corridors. In certain instances, the mere protection of such lands would suffice, while in others there may be a need to improve their status through planting of trees. Barriers such as electric fencing may also be needed in some of these corridors to prevent elephants from entering human settlements. The framework for maintaining these corridors (either through a private trust or through the government) will have to be evolved depending on the local situation.

3. Resolving human-elephant conflicts

With an increasing human population and fragmentation of elephant habitats, the incidence of serious human-elephant conflicts in Asia is growing. This is bad news from almost every perspective; the loss of human life, the loss of more and more elephant populations, the loss of habitats of importance for biological diversity, and increasing public antagonism to environmental conservation in general (which is sometimes seen as a hobby of the rich). Farmers and other local villagers who suffer the depredations of elephants (and other wildlife) typically lead a subsistence mode of living.

It is imperative that new means are devised and implemented to manage human-elephant conflict in a more effective manner. This would also contribute substantially to the overall economic development of local human communities, which now suffer losses to elephant depredations.

3a) Socio-economic analysis of elephant-human conflicts:

There is a need for field studies to assess different options for managing conflicts ranging from electric fencing, mechanical barriers, capture, translocation and occasional shooting of "rogue" animals. A cost-benefit analysis will be needed of different methods to keep elephants away from human settlement and cultivation. A field manual on managing elephant-human conflicts is needed for wide dissemination in Asian countries. Some aspects of this project are being carried out by the Asian Elephant Conservation Centre with funding from the Wildlife Preservation Trust International.

3b) People's participation in conflict management:

In countries such as India, Sri Lanka, Malaysia and Indonesia, the government has instituted measures for the alleviation of elephant-human conflict. These include electric fences, elephant-proof trenches and stone walls. The length of these barriers is often considerable and their maintenance by government agencies proves difficult. By enlisting the aid of local people directly protected by these barriers for their maintenance, the efficacy could be vastly improved. However, a certain amount of monetary incentive is necessary for enlisting their cooperation. Model projects involving both the local people and the wildlife authorities should be implemented in the field in a number of situations (subsistence farmers versus wealthy farmers, dry regions versus moist regions, different cropping patterns), and the success and problems evaluated before embarking on similar projects elsewhere.

3c) Elephant-proof mechanical barriers:

While electric fences and trenches have relatively high annual maintenance costs, a more permanent physical barrier with negligible maintenance needs may be the answer to eliminating elephant-human conflicts. A mechanical fence using the stocks of old railway tracks (replaced as a consequence of a gauge conversion policy in the Indian Railways) as elephant barriers has been proposed. The costs involved for erecting this kind of barrier is high but maintenance costs are practically negligible. Such barriers could be tried on an experimental basis in certain conflict zones and their efficacy carefully monitored.

4. Control of elephant poaching and the illegal ivory trade

It is not well recognized that poaching of Asian elephants for ivory and meat is widespread over most of the range states. While poaching of male elephants for tusks is a serious problem in India and many southeast Asian countries, the killing of elephants, both males and females, for meat is also prevalent over a wide region extending from northeastern India through Myanmar and Thailand into Indo-China. It is certain that poaching has played a significant role in the decline of several Asian elephant populations, although this has not been quantified in most cases. To tackle the problem of poaching we need to both assess the biological impact of poaching on elephant populations, and also investigate the illegal trade in elephant products, particularly in ivory.

4a) Assessing the impact of poaching on the demography and viability of elephant populations in Asia:

Poaching of male elephants for ivory in certain regions such as southern India has resulted in highly skewed sex ratios (female-biased). The consequence of this for the fertility, demography and genetic viability of the population has to be investigated. Some work on this aspect is being carried out by the Asian Elephant Conservation Centre with funding from the Wildlife

Preservation Trust International. However, many more populations in the country have to be covered.

4b) Investigation of elephant poaching and the ivory-trade:

With the current spurt in ivory poaching there exists a pressing need for augmentation of existing anti-poaching activities within elephant reserves. Current measures are hampered by the lack of vehicles and funds for their maintenance, state of art communication equipment, uniforms and foot-wear and medical facilities.

Information on ivory poaching networks is crucial for eliminating this activity. Apprehending persons directly involved with the actual killing of elephants is inadequate, as the masterminds of these operations are unaffected. Pervasive networks are required to tackle the problem effectively at this higher level. Occurrences of elephant poaching often go unnoticed because of the remoteness of the areas concerned. There is a need for setting up a system of informants within elephant reserves to expedite the detection of elephant deaths. Such a system would require payment of wages for regular surveillance and rewards as incentives when genuine cases are reported. It is essential that national and regional action plans be drawn up for both anti-poaching strategies and information gathering. Co-ordinating bodies within the region should be set up for analysis of sensitive information.

Several cases of gross violations of wildlife and forest laws by government agencies in India have come to light in the recent past. It has become progressively difficult for forest departments of elephant range states to file proceedings against offenders. An encouraging recent trend in India is the role that individuals and NGO's have played in filing public writ petitions. Courts within the country have been increasingly receptive towards such litigation. For providing legal advice and necessary evidence, it is essential that a cell be set up where legal personnel, scientists and managers collaborate in preparing effective petitions and executing appropriate legal action against poachers.

5. Health care, breeding and management of captive elephants

The elephant was tamed and put to the service of humans at least 4000 years ago in Asia. Since then, it has dominated the economic, political, social and religious life of peoples in Asia as has no other creature. Historically, elephants have never bred well in captivity, with the result that captive stocks have been regularly replenished through fresh captures from the wild. Today, about 30% of the global population of the Asian elephant is in captivity, mainly in timber camps in countries such as Myanmar, Thailand, India and Laos, as religious symbols in India and Sri Lanka, and zoos in Asia, Europe, North America and Australia.

With a few exceptions of timber camp elephants, particularly in southern India, captive elephant populations around the world are in decline, unless augmented by captures from the wild. As wild elephant populations are also declining in most countries, it is clear that captive populations have to be stabilized through better veterinary care, management and breeding. The traditional management systems in some Asian countries have evolved over several centuries, and have a lot to offer to western zoos. While this knowledge is essential for captive elephant management, there is much scope for improving the management by infusing modern scientific knowledge of elephant biology.

A series of projects can be built around Asia's captive elephants with the larger goal of maintaining healthy, productive populations that cater to the needs of sustainable timber industry, tourism, management of protected areas and cultural institutions.

5a) Reproductive biology and breeding of captive elephants and traditional management systems.
5b) Timber elephants in tropical forest management.
5c) An economic evaluation of captive elephants in Asia.

5d) Establishment of training schools for elephant trainers (mahouts).

6. Capacity building in elephant management

Many of the Asian countries do not have the technical expertise to plan and effectively implement strategies for the management of elephants. If this situation is not tackled, it could render many conservation projects ineffective, even if adequate funding is available. It is important to address this need through training workshops in several countries, particularly, Laos, Myanmar, Vietnam and Indonesia, on various aspects of elephant management. This would include survey and census techniques for elephant populations, building data bases using GIS, designing corridors for elephant movement, mitigation of elephant-human conflicts (design, construction and efficacy of barriers), elephant population management, habitat management, research methods including radio-telemetry, capture and translocation, veterinary care of captive elephants, etc. These workshops should be aimed mainly at personnel from the wildlife and/or forestry departments and local researchers from universities. Faculty for the workshops can be drawn from international experts and local experts.

5.2) Workshop Agenda

Monday, November 30: **pre-workshop planning**

David Hulse, Isabelle Louis, John Newby, Jikkie Jonkman, Michael Stuewe, Eric Wikramanayake, Eric Dinerstein, Chen Hin Keong, Tom Mathew, James Compton, Ginette Hemley, Steve Osofsky

Excerpt on Outputs (from pp. 6-7 of the original Letter of Invitation):

(1) The Two Action Plans

At a minimum, the two Action Plan products of this workshop (one for each species) should include a consensus-based list of national as well as regional priorities. Ideally... the output of this workshop should be a "who, what, where, when, why, and how" synopsis of activities worthy of WWF support. On-the-ground project as well as policy-level priorities should be summarized in a projects matrix that includes:

- *Who will take the lead on design and implementation of each project, and who will partner with them? Who will take the lead on integrating the project into existing WWF national and regional plans, ensuring linkages with other key WWF activities as appropriate?*
- *What are the defined conservation needs, what will actually be done to address them, and what are the measurable objectives of the proposed intervention(s)? What indicators of success will be used to monitor progress towards these objectives?*
- *Where specifically will the work be carried out? Maps that illustrate priorities identified during the workshop (along with overall rhino and elephant distributions) would be a useful output, complementing any projects matrix (see below).*
- *When will the work start, and when will it be completed?*
- *Why is this rhino / elephant population a priority for WWF's attention?*
- *How much will the effort cost, how will this program be funded, and how are long-term needs (sustainability) addressed? How much money is definitely available at the time of the workshop? How can new donors be attracted to support key initiatives?*

(2) The Projects Matrix, a "Living Document"

A rank-based matrix should be produced that outlines each issue/project deemed to fit into one of several defined categories of priority (for example, I- urgent, II- important, III-future) and that provides reasonable estimates as to the costs associated with the identified needs. Furthermore, each participant should try and come with an idea of what financial resources their WWF office has available and/or can potentially tap into. If at the workshop we can enumerate the financial resources available from the WWF network, they can be allocated across the highest category of priorities in the matrix. Any sort of projects matrix attempting to summarize our consensus should, of course, be considered a living document.

(3) A WWF Asian Rhino and Elephant Working Group

Another important product of this workshop would be a small "WWF Asian Rhino and Elephant Working Group," whose terms of reference would include being "keepers of the matrix" and keeping the relevant parts of the WWF network informed over time. This would help us keep tabs on how things are progressing regarding implementation of the Action Plans: what is getting funded, what has not, what new needs have suddenly emerged, etc. This coordinating body would facilitate (by e-mail list-serve, most likely) information flow on the various needs and projects, update the matrix or Action Plans as needed,

and coordinate the ongoing allocation of available funding. Such a Working Group would need to have a WWF chairperson- most likely the Head of the WWF International Species Conservation Unit.

Day 1- Tuesday, December 1

Introductory Remarks

- Workshop Opening- Hulse and WWF Indochina staff
- Introduction, Workshop Guidelines, Review of Workshop Objectives- Louis

The Draft Plans

- Overview of draft Asian Rhino Action Plan- Dinerstein/Wikramanayake
- Overview of draft Asian Elephant Action Plan- Sukumar

Range State Reports

India- WWF India; Nepal- WWF Nepal; Bhutan- WWF Bhutan; China- WWF China; Thailand- WWF Thailand; Lao PDR, Cambodia and Vietnam - WWF Indochina; Malaysia- WWF Malaysia; Indonesia- WWF Indonesia; Myanmar/Sri Lanka- Sukumar/Wikramanayake

IUCN SSC Specialist Group Perspectives

- Asian Rhino Specialist Group: Priorities and Approaches- Van Strien;
- Asian Elephant Specialist Group: Priorities and Approaches- Sukumar

Issues and Challenges

- **Illegal Trade** - TRAFFIC East Asia - Mills; TRAFFIC India – Misra; TRAFFIC SE Asia – Keong
- **Development, Habitat Loss, Land-Use Conflicts** – Overview – Stuewe; Case Study: Javan Rhinos- Ujung Kulon and Cat Loc-10 min- Van Strien
- **Human-Elephant Conflict** - Mitigation Case Study: Kodagu, Southern India - Sukumar
- **Domestic Elephants** - Conservation & Animal Welfare Issues – Lair; Case Study: Sumatra's Elephant Camps - Lilley & Stuewe; Reintroduction in Thailand -Lungka
- **Anti-Poaching:** RPU Overview- Van Strien; Case Study- RPUs: Lessons from Indonesia; India and Elephants: Response from Bangalore Meeting on Renewed Trade in African Elephant Ivory - Mathew

A Landscape Approach: Ecoregion-Based Planning- Dinerstein

Day 2- Wednesday December 2

Guidelines for Priority-Setting: A Quick Review

The TCU approach as an example-Dinerstein; Rhinos- Wikramanayake;
Elephants - Sukumar

Identifying National, Regional, and Network Priority Populations and Landscapes: Bioregional Working Group Session 1

(with concurrent session on fundraising strategies)

Break-out into bioregional groups (South Asia, Southeast Asia, Indochina) as assigned by Eric W. Groups are bio-geographically focused, and each group needs to cover priority setting, referring to

the draft plans, for both rhinos and elephants. We will try to distribute invited resource people evenly among the bioregional working groups, to help as facilitators and sources of information. Each group will need to select a note-taker, who will also report back to the entire group in plenary.

The product of this first session for each bioregional working group should be an outline of which rhino and elephant populations / landscapes are considered priorities (I- urgent, II- important, III- future) for that bioregion, highlighting any differences from the draft plans (and reasoning behind any such differences). The goal is to identify priority populations / landscapes- not actual projects at this point. Try to organize a rhino priorities list and an elephant priorities list, noting overlap whenever it occurs. Keep in mind that the next step (Bioregional Working Group Session 2) will be to develop conservation strategies (incl. projects) for any populations or landscapes on your region's list of priorities.

Fundraising Strategies, Funding Mechanisms, Donors, and Partners –

Jonkman and/or Nicholson and/or Hemley and other interested parties not contributing to the concurrent session described above. The outcome of this session will be presented tomorrow. (This session may not require the full 2 hrs 15 min. If it does not, feel free to circulate back into the working groups.)

Plenary on Population/Landscape Priorities

Each Bioregional Working Group, via their appointed spokesperson, will present their outline of priorities, and discuss how they used the suggested ranking criteria (or if they came up with additional ones). This is an opportunity to endorse or modify the draft Action Plans for both species.

South Asia; Southeast Asia: Indochina.

Delineating Methodologies for Action: Bioregional Working Group Session 2

The same bioregional working groups now compile information on what *methodologies* make sense to support the conservation of rhino and elephant populations / landscapes identified as priorities in Session 1. Again referring to the draft Action Plans, each group should identify what efforts are already underway in their countries/bioregions (including non-WWF efforts), and what priority gaps there are for rhino and elephant conservation. Refer to the information coming out of yesterday's "Issues and Challenges" sessions if that is helpful, and try and to include projects that address both local and remote threats to rhino and elephant conservation. Try to organize a prioritized rhino "things we need to do" list and a prioritized elephant "things we need to do" list, noting overlap whenever it occurs. Recall that the Action Plans are, for the most part, supposed to cover the next five years. We will again try to distribute invited resource people evenly among the bioregional working groups, to help as facilitators and sources of information. Each group will need to select a note-taker, who will also report back to the entire group in plenary.

Plenary on Conservation Methodologies Selected - Each Bioregional Working Group (South Asia; Southeast Asia; Indochina), via their appointed spokesperson, will present what they think needs to be done to support conservation of their priority populations / landscapes. This is another opportunity to endorse or modify the draft Action Plans for both species.

Day 3 - Thursday December 3

Priority Areas for Asian Rhino and Asian Elephant Conservation and the Global 200 Eco-regions- Dinerstein

Considerations Regarding Gifts to the Earth- Hemley

Financing Conservation and Thoughts on Sustainability- based in part on yesterday morning's "Fundraising Strategies, Funding Mechanisms, Donors, and Partners" session

WWF Netherlands- Jonkman; WWF United Kingdom- Nicholson; WWF United States- Hemley; WWF International - Newby

Building Monitoring and Evaluation into Projects - Stuewe

Drafting the Projects Matrix: Bioregional Working Group Session 3

Drawing on yesterday evening's plenary and the discussions that followed, this session is for fine-tuning WWF and TRAFFIC approaches for conserving Asian rhinos and elephants by creating a matrix that outlines *each issue/project/landscape* deemed to fit into one of the defined categories of priority (I- urgent , II- important, III-future) and that provides *reasonable estimates as to the costs associated with the corresponding project needs.* A matrix for rhinos and a matrix for elephants are being developed as appendices to the two Action Plans. An attempt should also be made *to list financial resources committed to specific efforts* (at least to the urgent priorities) wherever possible. Each priority should have an *assigned WWF point-person to coordinate follow-up.* A *time period* should be listed- when the work will start and how long it is likely to take. A Projects Matrix should be considered a living document, one that we'll use over the next 3 years.

Plenary on the Matrices - South Asia; Southeast Asia; Indochina

Where Are We?- Louis

An overview of what we accomplished in terms of the two Action Plans, the Project Matrices, and the ongoing working groups. Next steps will be discussed.

Day 4- Friday December 4

Bringing it All Together- Louis et al.

The members of the pre-workshop planning group (Hulse, Louis, Newby, Jonkman. Stuewe, Wikramanayake, Dinerstein, Keong, Mathew, Compton, Hemley, Osofsky), members of the AREAS working group, and members of the WWF Indochina Program will work to bring all of the material produced together so that the Action Plans and matrices accurately reflect the decisions made during the past three days. Next steps needed to complete the Action Plans, distribute them, and coordinate implementation will be discussed.

5.2) Contact List of Workshop Participants

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