

Orangutan Reintroduction and Protection Workshop

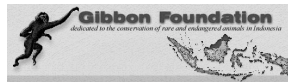
15-18 June, 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan,
INDONESIA

FINAL REPORT

SPONSORED BY:

The Gibbon Foundation
The Wanariset Orangutan Reintroduction Project
The Balikpapan Orangutan Survival Foundation (BOS-F)
The Balikpapan Orangutan Society (BOS-USA)



IN COLLABORATION WITH:

The Primate Specialist Group (SSC/IUCN)
The Conservation Breeding Specialist Group (SSC/IUCN)



Orangutan photos provided by Anne Russon.

A contribution of the IUCN/SSC Conservation Breeding Specialist Group.

Rosen, N., A. Russon and O. Byers (eds.). 2001. *Orangutan Reintroduction and Protection Workshop: Final Report*. IUCN/SSC Conservation Breeding Specialist Group, Apple Valley, MN.

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Orangutan Reintroduction and Protection Workshop

15-18 June 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan, Indonesia

Table of Contents

	Page
Section 1. EXECUTIVE SUMMARY	11
Section 2. REHABILITATION AND REINTRODUCTION WORKING GROUP REPORT	23
Section 3. VETERINARY WORKING GROUP REPORT	31
Section 4. HABITAT AND SPECIES PROTECTION WORKING GROUP REPORT	65
Section 5. FIELD RESEARCH AND RELEASE SITES WORKING GROUP REPORT	95
Section 6. SOCIOECONOMICS AND GOVERNANCE WORKING GROUP REPORT	113
Section 7. PUBLIC AWARENESS AND EDUCATION WORKING GROUP REPORT	123
APPENDIX I. DISSENTING OPINION PIECE	153
APPENDIX II. GIBBON FOUNDATION CHALLENGE	159

APPENDIX III. LIST OF PARTICIPANTS	163
APPENDIX IV. WORKSHOP GOALS AND ISSUES	175

KEPUTUSAN MENTERI KEHUTANAN NOMOR: 280/KPTS-II/95

PEDOMAN REHABILITASI ORANG UTAN (*Pongo pygmaeus*) KE HABITAT ALAMNYA ATAU KE DALAM KAWASAN HUTAN.

MEMUTUSKAN:

Menetapkan:

- Pertama: Menetapkan Pedoman Rehabilitasi Orang Utan (*Pongo pygmaeus*) ke habitat alamnya atau ke dalam kawasan hutan.
- Kedua: Pola rehabilitasi mengutamakan proses peliaran kembali secepat mungkin dengan memperhatikan unsure genetis, medis dan pembentukan kelompok orang utan serta habitat dan daerah jelajah.
- Ketiga: Kegiatan rehabilitasi Orang Utan (*Pongo pygmaeus*) harus menemuhui ketentuan sebagai berikut:
- a.) Adanya penetapan lokasi kawasan hutan yang jelas berdasarkan Keputusan Menteri Kehutanan:
 - b.) Kawasan hutan dimaksud dinilai memenuhi persyaratan yang antara lain:
 - Cukup luas sesuai dengan daya dukungnya.
 - Cukup makanan.
 - Sumber-sumber air yang cukup.
 - Terhindar dari gangguan.
 - c.) Kawasan hutan sebaga habitat diusahakan yang sebelumnya tidak terdapat orang utan dan tidak menyambung dengan kawasan yang sudah ada populasi orang utan.
 - d.) Idenifikasi jenis, dan asal-asal satwa, serta identifikasi medis/kesehatan.
- Keempat: Tahapan rehabilitasi dapat dilakukan melalui:
- a.) Identifikasi species dan asal-asal;
 - b.) Pemeriksaan medis;
 - c.) Pelatihan peliaran melalui pembentukan kelompok;
 - d.) Identifikasi habitat menyangkut potensi flora dan fauna yang dapat mempengaruhi kegiatan rehabilitasi.
- Kelima: Evaluasi terhadap kegiatan rehabilitasi orang utan dilakukan setiap priode tertentu (setiap akhir tahun).

Source: Suryohadikusomo, D (1995). Keputusan Menteri Kehutanan.

Nomor: 280/Kpts – II/95, Departemen Kehutanan, Jakarta

**DECREE BY MINISTER OF FORESTRY NUMBER: 280/KPTS-II/95
(English Translation)**

**THE MINISTRY OF FORESTRY DECREE CONCERNING REINTRODUCTION
OF ORANGUTANS INTO NATURAL HABITAT.**

- First: Creation of new regulations regarding Rehabilitation of Orang Utan (*Pongo pygmaeus*) back to natural habitat or forest areas.
- Second: The process of returning ex-captive orangutans to natural habitat must be done as quickly as possible focusing on genetic aspects, medical aspects and socialisation of orang utans and habitat factors.
- Third: Rehabilitation of orang utans must be conducted according to the following regulations:
- a.) The area of forest must be suitable according to the regulations by the Ministry of Forestry
 - b.) Factors determining suitability of forest area include:
 - adequate size to support the carrying capacity
 - adequate food sources
 - adequate available water
 - should be free from disturbance
 - c.) It should be established that the area of forest does not have a wild population of orang utans or connect to another region that has wild orang utans.
 - d.) Identification of genetic type and origin of orang utans
- Fourth: The stages of rehabilitation should involve:
- a.) Identification of the species and origin
 - b.) Medical Examination
 - c.) Formation of socialisation groups
 - d.) Identification of aspects of flora and fauna in the habitat affecting rehabilitation.

Translation of excerpt from Suryohadikusomo (1995)

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FINAL REPORT

Section 1 Executive Summary

Orangutan Reintroduction and Protection Workshop

Executive Summary

Introduction

Despite efforts to protect orangutans in the wild, prospects for their survival are the worst they have ever been. By the early 1990s, orangutan habitat was estimated to have dropped by at least 80% and numbers by 30-50% in a period of only 20 years. In 1997-98, Borneo was devastated by the worst drought and fires in almost a century, costing its orangutan population another 20-30% of its numbers and leaving only about 15,000 remaining. A recent wave of forest conversion, illegal and legal logging, and wildlife poaching has reduced orangutan numbers even further. In the Leuser ecosystem, the orangutan's stronghold in Sumatra, numbers have dropped over 45% since 1993 to leave as few as 6,500. During 1998-99, losses occurred at the rate of about 1,000 orangutans a year. In the wake of this onslaught, some 600 ex-captive orangutans are now under care in rehabilitation centers and an equal number are estimated to remain in captivity.

In view of the dramatic decline in numbers of wild orangutans that is bringing the population close to extinction, and the rapid decline of their habitat, there was a recognized, urgent need to bring together the world's experts to address the threats facing the critically endangered orangutan and to identify potential solutions. In January, 2001, Dr. Willie Smits of the Wanariset Orangutan Reintroduction Project, invited the Conservation Breeding Specialist Group (CBSG) to conduct an orangutan conservation workshop. The aim of this workshop, sponsored by the Wanariset Orangutan Reintroduction Project, the Balikpapan Orangutan Survival Foundation, the Gibbon Foundation, and the Balikpapan Orangutan Society-USA, was a call to action.

A total of 104 participants from 12 countries gathered in Balikpapan, Kalimantan from 15-18 June to develop an implementable plan to counter the primary threats to orangutan survival and minimize their risk of extinction. These participants included scientists, field researchers, veterinarians, captive managers, funding organizations, NGOs, and government and wildlife agency representatives.

The CBSG Workshop Process

Effective conservation action is best built upon critical examination and use of available biological information, but also very much depends upon the actions of humans living within the range of the threatened species. Motivation for organising and participating in a Conservation Planning workshop, such as this one for the orangutan comes from fear of loss as well as a hope for the recovery of a particular species.

At the beginning of each CBSG workshop, there is agreement among the participants that the general desired outcome is to avoid extinction of the species. The workshop process takes an in-depth look at the latest insights in the species' life history, population history, status, and dynamics, and re-assesses the threats that may put the species at risk. This workshop is a follow up of a similar CBSG gathering that took place in 1994.

One crucial by-product of a CBSG workshop is that, in addition to making use of valuable published information, an enormous amount of information that, to date, has not been published can be gathered and

considered. Equally importantly, ideas for more effective conservation are brought together and discussed. Thus, the contributions of all people with a stake in the future of the species are considered.

Complementary to the biological science review is the communication process, or deliberation, that takes place during a CBSG workshop. Participants work together to identify the key issues affecting the conservation of the species. These issues are themed into working groups and, during the process, participants work in small groups to discuss these key identified issues. Each working group produces a report on their topic, which is included in the document resulting from the meeting. A successful workshop depends on determining an outcome where all participants, coming to the workshop with different interests and needs, "win" in developing a conservation strategy for the species in question. Local solutions take priority. Workshop report recommendations are developed by, and are the property of, all participants.

The Orangutan Reintroduction and Protection Workshop Process

At the beginning of the Orangutan Reintroduction and Protection Workshop, the participants worked together in plenary to identify the major impacts affecting the conservation of orangutans (a list of these issues and each participant's personal goal for the workshop can be found in Appendix IV of this report). These issues were themed into six main topics, which then became the focus of the working groups: Reintroduction and Rehabilitation, Veterinary Issues, Habitat and Species Protection, Identification of New Field Research and Release Sites, Socio-economic and Governance Issues, and Public Awareness and Education. In addition, all groups were asked to consider the over-arching issues of: research, funding and implementation.

Each working group was asked to:

- Examine the list of issues affecting the survival of orangutans as they fell out under each working group topic, and expand upon that list, if needed.
- Define the current situation.
- Produce a summary statement describing and amplify the most important issues.
- Identify root causes of the problem
- Develop scenarios/strategies to address the root causes.
- Specify the action steps necessary to implement each of the scenarios.

Each group presented the results of their work in daily plenary sessions to make sure that everyone had an opportunity to contribute to the work of the other groups and to assure that issues were reviewed and discussed by all workshop participants. Each working group produced a report describing their topics, key issues, causes, and proposed strategies. For each strategy, action steps were developed to implement these strategies and group members took responsibility for carrying out these actions. Detailed working group reports can be found in sections 2 - 7 of this document.

Summary of Workshop Results

In the final plenary session, each working group presented their top priority strategies and then the workshop as a whole prioritised these. Each participant was given three sticky dots and asked to put a dot on the strategy they felt held the most promise for effecting conservation of the orangutan. They could put one dot on each of three strategies or place all three dots on one. A small group, made up of one representative from each working group, was then convened to integrate the working group results and summarize the results of the prioritization exercise.

A total of 19 key strategies were developed and unanimously accepted by workshop participants, based on the 3-4 most critical strategies identified by each working group.

The major issues which emerged as top priorities (and the number of dots each received) are:

1. Stop Illegal Logging (60)
2. Increase sustainable economic alternatives for communities surrounding critical orangutan habitat (31)
3. Assure sustained funding for the long-term in-situ orangutan research vital for effective orangutan conservation (28)
4. Create a national campaign to instill national pride in the orangutan and its environment (28)
5. Recommend that ex-captive orangutans are only released into suitable habitat that does not contain and is geographically isolated from wild orangutan populations (21)

Either directly or indirectly, all these strategies focus on what is universally accepted as the root cause of all major problems for orangutans, habitat loss. A major catalyst to habitat loss is the economic and political crisis. Among the fallouts are mushrooming numbers of ex-captives, fragmentation of wild populations and consequent genetic fragility, scarcity of appropriate release sites for rehabilitants and reduced carrying capacity in remaining wild orangutan habitat.

The international group of experts assembled for this workshop have committed to take responsibility for carrying out various actions to implement the strategies outlined. Details can be found in the individual working group reports (sections 2 – 7) and are summarized below.

Working Group Issue Statements and Recommended Strategies (in order of priority within working group)

Reintroduction and Rehabilitation

An estimated 600 wild born ex-captive orangutans are currently in rehabilitation centers. This reflects the massive destruction of tropical rainforests and poaching throughout Borneo and Sumatra, which has been exacerbated by fires (including arson), illegal logging, and commercial scale palm-oil and pulp-wood plantations. As a result, the Reintroduction and Rehabilitation working group makes the following recommendations (ranked in order of priority by working group members; this ranking does not necessarily reflect the views of participants in other working groups) and takes responsibility for initiating their implementation:

1. Orang-utans must be released into protected and potentially protected areas.
2. Law enforcement and appropriate deterrents to the killing and capturing of orangutans are crucial, combined with intensive habitat protection.
3. Recognizing that no one organization or institution alone can solve these problems, we recommend forming an alliance of the rehabilitation centers across Borneo and Sumatra in order to work cooperatively to further these aims.
4. We will ensure the integrity of wild populations.

Veterinary Issues (a sub group of the reintroduction/rehabilitation working group)

The Veterinary Working Group began by reviewing past procedures and protocols that have been previously recommended for implementation. Their next step was to review what is currently being implemented by various Reintroduction Centres and to identify anomalies and/or difficulties being encountered in the application of such recommendations and to attempt to define the root causes for such problems. Finally, they updated current knowledge and research findings and, with due consideration to past and present protocols, developed a series of recommendations for revised protocols and procedures. Their intent is that this will result in healthier orangutans and a lower mortality rate in Rehabilitation Centres and provide maximum protection against introduction of diseases into naïve wild populations of primates and other animal species in the release forests. Hence, the Veterinary Working Group recommended that orangutans must be reintroduced into suitable habitat that does not contain, and is geographically isolated from, wild orangutan populations. The full list of recommendations (including quarantine, health and disease protocols, tuberculosis, hepatitis, parasites, genetics and release and translocation procedures) can be found in the Working Group Report in Section 3 of this document.

In addition, the Veterinary Working Group realised the value provided by this workshop of a representative group of people with similar interests and with expertise in different aspects of orangutan conservation and rehabilitation, having the opportunity to meet and discuss problems, update on and share current knowledge. Therefore, the group proposed that an on-going Veterinary Committee be constituted with the objective of reviewing Veterinary matters and problems associated with Orangutan Conservation and to monitor technical developments. This Veterinary Committee should come under the umbrella of an Alliance concerned with Orangutan Conservation and Rehabilitation that is to be established as a result of the recommendation by the larger Reintroduction and Rehabilitation Working Group. The Committee will be called *Komisi Doktor Hewan untuk Orangutan* (Veterinary Committee for Orangutans) and be comprised initially by the members of the Veterinary Working Group (Drs Sajuthi, Swan, Warren, Heriyanto, Garriga, Nente, Nurcahyo and Faitova). The first meeting is to be convened in Bogor in the first half of 2002. Other veterinarians with orangutan experience or expertise may be invited to the meeting.

Habitat and Species Protection

In Sumatra, recent research has concluded that around 45% of the orangutan population has been lost as a direct result of habitat loss since 1993. The situation is worse in Borneo (Rijksen and Meijaard, 1999). The Habitat and Species Protection Working Group began by highlighting the principle causes of this decline, and then explored some of the underlying mechanisms and attempted to offer workable solutions. Illegal logging was identified as the top priority issue of concern for this group. Recognizing that a demand for timber in an environment of inadequate law enforcement with individual corruption at every level leads to illegal logging, several recommendations (detailed action steps are outlined in the working group report found in Section 4 of this document) were made to address this complex problem:

1. Identify a method for mechanical protection and devaluation of trees that does not harm people (see Gibbon Foundation Challenge, Appendix 1).
2. Encourage enforcement of the appropriate legal framework (Presidential Decree #5/90A decree and Forest Regulation #41/99).
3. Link the ongoing Dana Alokasi Umum (Special Allocation Funds) for the Bupatis to conservation issues.

4. Establish Orangutan patrol units modeled after Rhino patrol units.
5. Encourage the establishment of a new government policy to prevent the laundering of illegal timber.
6. Present the case for orangutan conservation to local and national parliaments.
7. Assess how many people are killed and injured in the process of legal and illegal logging so that information can be used to influence public opinion.

Field Research and Release Sites

Field research stations have been shown to play an important role in local conservation in a variety of ways, but this important role is not widely recognized by local officials, local populations, or funding agencies. At present, research sites and to some extent release sites have grown up in an ad hoc fashion, rather than being the product of systematic planning and surveying. It is currently difficult to find funding, especially long-term funding, for field research, perhaps in part due to the poor acknowledgment of their importance in conservation. In addition, a universally recognized weakness of reintroduction programs is poor monitoring and follow-up. By integrating these programs more directly to studies of wild orangutans, the wild data will provide the reference and yardstick suitable for assessing the success of releases. The utility of information generated by research for reintroduction work, and for proper documentation of the variability across existing sites will be maximized by standardized methods. Based on this description of the problem, the following recommendations were made:

1. Articulate the role of research stations and develop strategies to remedy the lack of acknowledgment of their role in conservation.
2. Identify the criteria that will ensure optimal systematic research coverage of the existing range. Based on these criteria, develop recommendations for the location of new sites for research and release.
3. Identify ways to secure long-term financial support for orangutan field research.
4. Ensure good coordination between research and release programs to maximize the utility of research for release efforts.
5. Develop minimum standards to allow effective comparisons of data collected across sites.

The Field Research and Release Sites Working Group members will use the information contained in this report to inform (and appeal to) local, regional, national, and international agencies of the extreme conservation value of orangutan research. The main message to be broadcast is that one cost-effective way of achieving conservation is to support long-term field research stations.

Socio-economic and Governance Issues

The Socio-economic and Governance Working Group dealt with four main topics: Trade/Demand, Development, Government Devolution, and Conflict/Empowerment.

Trade/Demand

Internal and external market demand for natural forest produce and products grown on ex-forest land is a strong driver of forest degradation and conversion but CITES and other international treaties are neither applied effectively to combat illegal activities nor address all produce. In addition, development assistance is often designed to increase demand for products originating in the donor country.

Recommendations to address this include (additional recommendations and details can be found in Section 6 of this document):

1. Create targeted awareness/education campaigns focused on the internal and external market demand.
2. Boycott and lobby in "consumer" countries to reduce demand or divert to sustainable sources.
3. Lobby for an increase in sustainable economic alternatives for local communities collateral to support for protection and conservation.
4. Lobby within donor countries to allow for a larger percentage of the aid funds to be spent in recipient countries.

Development

There is a lack of understanding of the value of the forest and individual species such as the orangutan and this is a driver of environmental (forest) degradation. Adding to this is the fact that government policies do not involve local communities in the decision making process for either forest protection or forest exploitation. In fact, government bureaucracy and policies inhibit participation by local interested groups in the management of protected areas. Recommendations to combat this include:

1. Create educational awareness campaigns introducing a school curriculum and local and national media exposure focusing on wildlife endemic to Indonesia.
2. Define the values of the forest in terms of concrete resources that all people need and understand, like access to water.
3. Allow conservation areas to be privatized and fees to be changed for entering.
4. Whenever policies affecting a specific area are being reviewed or initiated, the local government should be involved and included in the decision making process.
5. Encourage innovative new methods for finding funding for conservation.

Government Devolution

Decentralization of the Indonesian government has been implemented rapidly without:

- appropriate personnel and policies in place to protect the environment
- coordination between government sectors at different levels
- sufficient operating budgets, thus leading to non-sustainable pressure on the natural resource base and the degradation/conversion of forests.

Democratic processes are expediently resisted by some influential politicians and are still poorly understood by both government and communities. Standard operating procedures for decision making are challenged due to their lack of transparency and, thus making corruption possible and leading to non-sustainable pressure on the forests and wildlife. To improve this situation, the following recommendations were made:

1. Lobby for simplified governmental regulations for privatization and management of state forest lands. This could include workshops on Democratic processes for party leaders, government and community leaders.
2. Identify key areas of high priority for orangutans and provide the district officials in these areas with expert assistance in planning, budgeting, ecology and legislation. Be aware that in current Indonesia, western logic is scarcely applicable so that the information will often lead to sabotage and destruction of the identified forest values.
3. Use existing law enforcement system in prosecution of environmental crimes and consider establishment of an environmental court to handle these crimes. Let non-Indonesians refrain from being directly associated with law-enforcement operations.

Conflict/Empowerment

The lack of clear natural resource management policies leads to inequities and thus disputes between central and local government and local communities. Conflicting laws regarding land tenure issues in Indonesia lead to uncertainty in the demarcation of land ownership. Therefore, the group recommended the following:

1. Lobby for development of clear natural resource management policies at the appropriate levels and engage the central and local governments of Indonesia in the areas of conflict.
2. Provide local communities with legal and technical expertise to enable them to register their land titles, where feasible. This will be done in conjunction with natural resource management plans for the areas.

Public Awareness and Education

There is very little knowledge in the general public worldwide of the fate of the orangutan and of the imminent threat to its survival. This lack of knowledge and appreciation is important because the formulation and implementation of laws to safe guard orangutans is dependent on the human population's appreciation of the orangutan and its environment and the benefits of complete natural forest ecosystems to the Indonesian and Malaysian people. The orangutan offers an attractive opportunity to be used as a flagship species and to be presented as a national emblem for Indonesia. By promoting it as an emblem it may be possible to raise adequate awareness and national pride to develop the necessary support for its conservation. By conserving the orangutan, its environment will also be safeguarded. This will protect soils, streams, forests, and their respective wildlife, which are all important to people and will contribute to an ecologically balanced environment. A rapid change of the national attitude is hoped for because of the imminent threat of vast environmental destruction and the prediction that if this continues the orangutan will disappear from the wild in ten to twenty years. A major effort to bring this into the national and international consciousness is required.

The Public Awareness and Education Working Group identified three targets to which education and awareness should be directed (local communities, Indonesian and Malaysia audiences, and the international community) and developed recommendations specific to each.

Local Communities

1. Compile a list of existing organizations engaged in environmental/orangutan education and awareness campaigns in Kalimantan, Sumatra, Sarawak, and Sabah (the production of this resource was begun at the workshop and several example projects are described in Section 7 of this document).
2. Develop and implement “*Forum Komunikasi untuk Pendidikan Konservasi Orangutan*” that will link all individuals working on conservation and orangutan issues in Indonesia and Malaysia. This network will put together an email mail list for contacts in environmental education and awareness campaigns and hold annual meetings to discuss ways to coordinate measures and to develop an effective educational curriculum.

Indonesian and Malaysia Audiences

1. Approach Indonesian media professionals, various embassies and large international public relations firms requesting their assistance in creation of a large, grand scale public media campaign at the national level.
2. Encourage regional NGOs and orangutan experts to coordinate with media to develop informative programs to stimulate the involvement of local citizens particularly children.
3. Develop a recurring lobbying effort for use by concerned persons with access to political and administrative officials to keep them informed about the status of the orangutan, and to press for execution of laws and regulations and implementation of recommendations from this workshop.
4. Encourage orangutan experts to coordinate to provide information for use in education. There should be lobbying of the Ministry of National Education, with support of the Ministry of Forestry, to have these elements incorporated into the curriculum.

International Community

1. Get professional organisations such as WWF and Greenpeace (etc.) to develop a mass media campaign (in Europe, Australia, North America and in Eastern Asia, particularly in Taiwan, China, Japan, and other countries that import Indonesian forest products and endangered species) with the goal of heightening international awareness. Negotiate for the dissemination of real information rather than the common myths.
2. Encourage information sharing among organizations to coordinate education and awareness campaigns in countries where multiple efforts already exist.
3. Encourage existing international organizations to facilitate efforts to address trade issues in East Asia where many pet orangutans and forestry products are imported.
4. Lobby political and administrative leaders at the national, provincial and district level to bring orangutan conservation on to the national political agenda. Even though relevant decisions may be taken at the local level, the plight of the orangutan should be made a matter of national concern.

Conclusion

The consensus of this workshop is that habitat loss through illegal logging and land conversion is the greatest sustainable threat to the orangutan. There is no time left for further contemplation and research. Ultimately, the survival of the wild orangutan is the responsibility of the Indonesian and Malaysian governments. Unless there is the political will to commit to saving the orangutan, the orangutan will not survive. The international community shares responsibility and its support is critical in ensuring the survival of the species.

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FINAL REPORT

Section 2

Rehabilitation and Reintroduction Working Group Report

Rehabilitation and Reintroduction

We acknowledge that the orangutan is in a crisis situation and that our efforts under these circumstances are to alleviate the immediate concerns without neglecting long-term considerations for orangutan survival. Currently we estimate that there are at least 600 wild born ex-captive orangutans in rehabilitation centers and there are probably at least an equal number of orangutans being held illegally in captivity. If law enforcement can be improved up to standard, then all these apes may soon enter the few authorized rehabilitation centers. These problems reflect the massive destruction of tropical rainforests and poaching throughout Borneo and Sumatra, which has been exacerbated by fires, illegal logging, and commercial scale agricultural plantations. As a result, we recommend the following. [Note: this ranking reflects the priority issues under the topic of rehabilitation and reintroduction. For conservation of orangutans it is agreed that the top priority is to keep these animals in their original habitats.]

TOP PRIORITY: Orang-utans must be released into protected and potentially protected areas according to Indonesia's legal framework, IUCN's guidelines, and the recommendations of the veterinary group.

SECOND PRIORITY: Law enforcement and appropriate deterrents to the killing and capturing of orangutans are crucial, combined with intensive habitat protection.

THIRD PRIORITY: Recognizing that no one organization or institution alone can solve these problems, we recommend forming an alliance of the rehabilitation centers across Borneo and Sumatra in order to work cooperatively to further these aims.

FOURTH PRIORITY: We will ensure the integrity of wild populations.

Release of wild-born ex-captives

The large numbers of ex-captive orangutans currently housed at rehabilitation centers have created major pressures, especially for locating suitable, secure habitat for their release. If orang-utans are to be released into protected or potentially protected areas, four steps have to be followed in locating appropriate habitat:

- Make available and disseminate any and all information that will help identify suitable sites. (Leiman, Galdikas, Rijksen, Pratje, in collaboration with Indonesian forest experts, June 2002)
- Conduct rapid baseline assessments of potential release sites (Leiman, Galdikas, Rijksen, Pratje, in collaboration with Indonesian forest experts, June 2004)
- Collate all relevant information and produce draft reports for circulation among rehabilitation centers and stakeholders and review (Leiman, Galdikas, Rijksen, Pratje, in collaboration with Indonesian forest experts, Dec 2004)
- Present the final findings to the relevant government agencies (in Indonesia, at the district *Kabupaten* level). (Leiman, Galdikas, Rijksen, Pratje, in collaboration with Indonesian forest experts, Dec 2004)

Law enforcement

The unprecedented numbers of orangutans illegally kept and exported offer evidence that current law enforcement is ineffective. In the last 10 years alone, virtually all suitable orangutan habitat has been destroyed or demolished (Our Vanishing Relative, Rijksen and Mijaard 1999, Van Schaik, Robertson and Singleton, 2000). For these reasons, better enforcement of all laws that concern protecting orangutans, including deterrents (law enforcement against the killing, capture, and/or keeping of orangutans) is

needed, combined with the effective protection of their habitat. Law enforcement has to tackle two problems simultaneously:

- Try to prevent the killing and capturing of orang-utans through educating local populations regarding orangutan and habitat protection laws. (Sugardjito, Suharto, Zaqie Dec 2002-June 2003).
- Looking into 'new' means of deterrence by rewarding the efforts of the local community to participate in protecting the orang-utan and its habitat. (Sugardjito, Suharto, Zaqie Dec 2002-June 2003).

One immediate recommendation was made:

- On the model of current rhino and tiger patrols in Sumatra, we propose forming patrols specializing in orangutan protection. These patrols would deal with habitat protection (including fires) as well as the poaching and killing of orangutans. (Sugardjito, Suharto, Zaqie Dec 2002-June 2003)

Rehabilitation Center Alliance

In the past, each rehabilitation center has worked in isolation. In the face of the current crisis, coordination and cooperation between these centers must be established. The purpose of an alliance of the rehabilitation centers over Borneo and Sumatra is to foster better links and cooperation between the centers and all of the orang-utan range country experts. An alliance would better communicate with governmental and funding agencies, as well.

- We will work towards a meeting of all centers in 2002. (Rosen, Leiman, Lardeux-Gilloux, Cocks 2002)

Release Sites

Rehabilitating ex-captives requires locating forest areas into which they can be released. Releasing ex-captives into areas with wild populations is recognized to put the wild populations at very serious ecological and epidemiological risk. Our concern must always be to maintain the integrity of wild populations.

For this reason, our recommendation corroborates the legal framework of Indonesia and IUCN guidelines in that rehabilitants not be released into wild orang-utan populations. Exceptions, however, may be proposed to the authorities in case of small unviable relic populations in apparently suitable habitat of sufficient carrying capacity. The argumentation for such a proposal must therefore be backed by serious scientific inventories of the population size and an assessment of the carrying capacity by at least two independent experts.

Another option to consider might be to introduce those orang-utans ineligible for release into degraded forests with a redevelopment plan (habitat restoration) or with long-term or sustainable provisioning, provided these areas do not have other endangered species present that will be affected by the introduction.

Ecotourism

Most orangutan-focused ecotourism ventures have focused on ex-captives orangutans, so it is a major concern for rehabilitation centers. There is clearly a need to reevaluate orangutan ecotourism, so we recommend

- Developing revised guidelines based on existing practices and problems (Leiman, Russon, Groves, Susilo, Galdikas, Lardeux-Gilloux Nov 2001). [Note: It was suggested by a reviewer that a study be conducted of the ontogenetic development of orangutans in two different situations – one with exposure to tourists and one without- by a research team that is independent of vested interests in orangutan rehabilitation. (e.g. under guidance of Van Hooff)]
- Design visitor models that control against well recognized problems (e.g., precluding physical contact, avoiding especially sensitive phases of rehabilitation, or opening only certain subgroups of ex-captives to visitors) (Leiman, Groves, Susilo, Galdikas, Lardeux-Gilloux Nov 2001)
- Provide appropriate educational experiences (Leiman, Groves, Susilo, Galdikas, Lardeux-Gilloux June 2002)
- After the results of the research allows for an authoritative decision and development of guidelines, meet with rehabilitation centers and tourism experts to help develop site specific proposals (Leiman, Groves, Susilo, Galdikas, Lardeux-Gilloux June 2002)

Funding Orangutan Protection

Rehabilitation projects have opportunities for fund-raising that are not open to habitat protection projects. When surplus funds are available, we recommend that rehabilitation centers allocate a portion of the surplus to habitat protection. Considering the current numbers of rehabilitants, the slow rate of rehabilitation and the cost per ape, this is an unlikely proposition for the coming years however.

Accredited zoos are among the other organizations that are natural partners because of their expertise in small population genetics, veterinary medicine, animal husbandry, hand rearing, behavioral enrichment, raising public awareness, and behavioral assessment. Such partnerships are encouraged.

Pursue partnerships with accredited zoos (Galdikas, Cocks, Drosher-Neilson June 2002).

Rehabilitation Procedures

We recommend revising rehabilitation procedures to address successes, criticisms, problem practices, and clearly changing conditions (e.g., developing methods for systematic long-term monitoring, establishing valid criteria for assessing progress, etc.). Self-evaluation as well as cooperation between projects is encouraged. The aim is to encourage the sharing of expertise.

- Review existing practices and evaluations and generate recommendations (Singleton, Russon, Swartz, Galdikas, Cocks, Lardeux-Gilloux June 2002).
- Develop methods for systematic long-term monitoring (Russon, Galdikas, Swartz, Leiman, Lardeux-Gilloux June 2002).

Individual Welfare

We acknowledge and respect the importance of individual orangutans' welfare during the rehabilitation process. Ex-captives ineligible for release (e.g., disabled behaviorally, physically, or psychologically; chronic disease carriers) should not be provided inferior treatment or be subjected to any form of abuse. The philosophy of working with orangutans should be gentleness, respect, and consistency. Not respecting other species in and of themselves leads to treating them as commodities, only valuable insofar as they serve human purposes. We recommend assisting centers to handle difficult cases (i.e. individuals with highly abnormal behavior or unusual diseases), including helping them communicate with experts worldwide.

- Drafting a welfare document for rehabilitation guide-lines (Shumaker, Cocks June 2002)

- Develop proposals for difficult cases (i.e.: individuals not suitable to return to forest life) (Russon, Galdikas June 2002).

Terminology

We recognize the need for consistency in terminology, for effective and clear communication. IUCN has prepared the Guidelines for Reintroductions (1998) that supersede the IUCN Position Statement on Translocation of Living Organisms (1987). These guidelines were prepared as a response for re-introduction practitioners worldwide, due to the increasing numbers of re-introduction projects and the need for guidelines. We recommend adhering to this terminology and Indonesian legal guidelines.

The general term “*Re-introduction*” encompasses the following:

- 1) Re-introduction – *an attempt to establish a species (this could mean subspecies or race as long as it can be defined) in an area which was once part of its historical range, but from which it has been extirpated or become extinct.*
- 2) Conservation/Benign introduction – *an attempt to establish a species, for the purpose of conservation, outside its recorded distribution but within an appropriate habitat and eco-geographical area.*
- 3) Re-enforcement/Supplementation – *addition of individuals to an existing population of conspecifics.*
- 4) Translocation – *deliberate and mediated movement of wild individuals to an existing population of conspecifics.*

It is important to mention that terms 1, 2 and 3 are used specifically for WILD, VIABLE, SELF-SUSTAINING POPULATIONS and NOT individuals. The term translocation could be used when wild individuals are removed from one to another wild location.

In relation to the placement of confiscated orangutans the following terms may be appropriate in describing the various types of actions:

- **RE-INTRODUCTION:** The release of the appropriate subspecies or race into an area, which was once part of its **historical** range and from which it has become **extinct**.
 - **ASSUMPTION: we assume that we are releasing a viable, self-sustaining population in to the wild without human intervention on a regular basis e.g. provisioning.**
- **REHABILITATION:** The release of individuals (representing a mixture of subspecies, race or hybrids) into an area which is part of their historical range, from where they have become extinct, but are under human intervention to ensure their survival in this habitat.
 - **ASSUMPTION: this is assuming a non-viable population and which is mainly done for humane/welfare reasons as opposed to conservation. The priorities here are “individuals” as opposed to “populations”.**
- **INTRODUCTION:** of an organism is the intentional or accidental dispersal by human agency of a living organism outside its historically known native range.
 - **ASSUMPTION: it is also recognized that this individual can have a negative impact on both flora and fauna of the introduction site e.g. habitat destruction, competition with other species).**

Introductions to Natural Habitats – No alien species should be deliberately introduced into any natural habitat whether within or beyond the limits of national jurisdiction. A natural habitat is defined as a habitat not perceptibly altered by man. Where it would be effective, such areas should be surrounded by a buffer zone sufficiently large to prevent unaided spread of alien species from the release area.

- **ASSUMPTION: Release of orangutans into a non-historic range but in a natural habitat. This could be an *ex-situ* sanctuary in a forest habitat.**

Introduction into Semi-natural habitat – No alien species should be introduced into a semi-natural habitat unless there are exceptional reasons for doing so, and only when the operation has been comprehensively investigated and carefully planned in advance. A semi-natural habitat is one which has been detectably changed by people's actions or one which is managed by man, but still resembles a natural habitat in the diversity of its species and the complexity of their inter-relationships (**this excludes arable farm land, planted ley pasture and timber plantations**).

- **ASSUMPTION: Release or maintenance of orangutans in a semi-natural habitat e.g. highly modified forest or habitat approximating something close to their *in-situ* range.**

- **SUBSTITUTION:** introduction of a species that is closely related to, or is a subspecies of, a species that has become extinct in the wild and in captivity. The introduction occurs in suitable habitat within the extinct species' former range (Seddon & Soorae, 1999). Seddon, P. J. & P. S. Soorae (1999), Guidelines for Subspecific Substitutions in Wildlife Restoration Projects. Conservation Biology, Vol. 13(1): 177-184.

HARD- AND SOFT-RELEASES

- **Hard Release:** A release without any prior acclimatization at the release site or provision of food/water.
- **Soft Release:** A release where individual(s) are maintained at the release site for a period of time in confinement and upon release may be provisioned with food/water for an extended period of time or until total independence is achieved.

Support Systems

We recognize that rehabilitation programs cannot operate in isolation, and in fact they depend upon a wide range of support systems. We have identified the roles that support systems play in fostering the effective functioning of rehabilitation centers, and the systems that normally fill those roles.

Protection/Capacity Building

- Ranger patrol system

To optimise the support and assistance from the province rangers (at least some) should be recruited from the KSDA (national park services) and/or from the communities surrounding the release site.

- Donation of hardware (radios, motorbikes, off-road cars, etc.)
- Workshops and training in monitoring skills

Offer jobs and income to encourage co-operation and support from local communities close to the release site

- Guides and field assistants for surveys and monitoring
- Monitoring units to record the dispersal of the released orang-utans
- Station staff (technicians)

- Foodstuff for the quarantine sites, release sites and half-way/midway houses from the surrounding villages

Lobbying and education

- Mobile education units (Target: schools, local communities) teaching lessons in conservation and basic ecology
- Public awareness (painting contests, environment days, etc.)
- Media campaign (TV, local radio stations, newspapers; frequently updated information about the progress and activities of the programme)

Science/Monitoring

- Research programmes beyond the pure monitoring of the released orang-utans preferably in co-operation with local universities to boost the commitment of the province
- Tandem system for research (Indonesian counterparts for every foreign student)

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Orangutan Reintroduction and Protection Workshop

15-18 June 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan,
Indonesia



DRAFT REPORT

Section 3 Veterinary Working Group Report

Veterinary Working Group

A sub-committee of the Reintroduction and Rehabilitation Working Group

TABLE OF CONTENTS

PART A

1. Introduction
2. Background to this Report
3. Terms of Reference
4. Issues identified
 1. Quarantine protocols
 - International
 - Local
 2. Health Examination Protocols
 - Physical Clinical examination
 - Morphological measurements
 - Laboratory tests
 3. Update on current knowledge
 - (a) Tuberculosis
 - (b) Hepatitis B
 - (c) Other diseases of orangutans
 - (d) References – diseases of Rehabilitant Orangutans
 - (e) Nutrition
 4. Genetics - geographic origin
 - implications for releasing orangutans
 5. Facilities and equipment
 - Quarantine and holding facilities
 - Diagnostic equipment
 - Clinics
 - Hospitals
 - Pathology
 - Environmental waste management
 6. Protocols for confiscation, rescue and translocation
 7. Staff health matters
 8. Tourists and visitors
 9. Diseases associated with captivity
 10. Public education on zoonotic diseases
 11. Conservation of wild orangutan populations – medical and genetic aspects
 12. Ongoing veterinary committee

PART B

The Way Forward – Past, Present and Future

1. Introduction
The Past – Action Plans and Veterinary Medical Procedures and Policies
2. The Present
3. Position regarding implementation of “Medical procedures during quarantine of orangutans intended for Reintroduction.”
 - (a) Implementation of Medical procedures by Reintroduction Centres.
 - (b) Length of Quarantine period
 - (c) Medical history of orangutans
 - (d) Chest radiographs
 - (e) Hepatitis and TB testing
 - (f) Quarantine facilities
 - (g) Parasite control
 - (h) Vaccinations
 - (i) Veterinary committee
4. Update of Current Knowledge
 - (a) Tuberculosis
Reference TB
 - (b) Hepatitis B
Reference HBV
 - (c) Other Diseases of Orangutans
References – other diseases
 - (d) References – Diseases of rehabilitant Orangutans
 - (e) Nutrition
5. Genetics
6. Facilities and Equipment
7. Protocols for confiscation, rescue and translocation
8. Staff Health Matters
9. Tourists and Visitors
10. Diseases associated with captivity
11. Public education and zoonotic diseases
12. Conservation of Wild Orangutan populations – medical and genetic aspects
13. Ongoing veterinary committee

PART C

Recommendations by the Veterinary Working Group

Appendix 1

Medical Procedures during quarantine of orangutans intended for Reintroduction: updated recommendation to the Department of Forestry of the Republic of Indonesia. .Sajuthi *et al.*, 1994.

Appendix 2

Keputusan Menteri Kehutanan Nomor: 280/KPTS-11/95
Pedoman Rehabilitasi Orangutan (*pongo pygmaeus*) Ke Habitat Alamnya Atau Ke Dalam Kawasan Hutan

Appendix 3

Decree by Minister of Forestry Number: 280/KPTS-11/96
The Ministry of Forestry Decree Concerning Reintroduction of Orangutans into Natural Habitat.
(*English translation of Appendix 2*)

PART A

1. Introduction

The diagnosis and control of diseases is based on the need to prevent or reduce infections and mortalities occurring in confiscated orangutans in Rehabilitation Centres and most importantly, to prevent the transmission of exotic diseases into naïve wild populations.

It has long been assumed that diseases in captive orangutans were diseases transmitted from humans, or domestic animals, during captivity. Recent findings have shown that Hepatitis B in orangutans is not of human origin, but is a hepadnavirus (OHV) indigenous to orangutans and distinctly different from the human virus (Warren *et al.*, 1999, Verschoor *et al.*, 2001). Such findings have implications for quarantine and management policies in rehabilitation centres and need to be considered in this report.

The mechanisms of transmission of diseases, vary widely from disease to disease. Differing methods of transmission could either enhance or hinder transmission from humans to orangutans. Hepatitis A and Hepatitis B are good examples. Hepatitis A is transmitted by the faeco-oral route, whereas Hepatitis B is transmitted by blood, semen and body fluids. Hepatitis A would appear to be more readily transmittable from humans to orangutans than would Hepatitis B, which would rely on more intimate contact.

In the early development of Reintroduction methodologies, disease control was based on knowledge available, at a time when there was little known about the prevalence of diseases in either captive or wild populations. In the last decade some research findings have recently become available. It is now timely to review and revise if appropriate, the health requirements and protocols as part of the evolutionary process towards achieving more successful rehabilitation, while at the same time protecting wild populations.

2.0 Background to this Report

The group comprised eight veterinarians with a wide range of expertise concerning orangutans and the rehabilitation process. Representation was from within Indonesia as well as overseas, and from veterinarians and veterinary researchers from Universities, the Primate Research Centre, Bogor, Indonesian Quarantine Service, and from Rehabilitation Centres at Wanariset, Pangkalan Bun and Medan. Many members of the group were also familiar with the activities of rehabilitation Centres throughout Kalimantan, Sumatra, Sabah and Sarawak.

The group also had frequent opportunities during the workshop for networking and consulting with other working groups and registrants.

In addition, the group invited the attendance on two separate occasions of two respected specialists, Dr Herman D. Rijksen and Dr Colin Groves, to discuss certain specific issues.

The issues included:

- definition of “viable populations” and estimates of the size of such populations
- the pros and cons of releasing rehabilitant orangutans into forest containing wild orangutans
- the availability of suitable orangutan-free forests for release of rehabilitants.

4.0 Terms of Reference

The group decided that consideration would be given to (1) diseases (diagnosis, control and prevention of infectious bacterial, viral and parasitic diseases and non-infectious diseases) and (2) management factors and (3) genetic factors associated with the rehabilitation/reintroduction process.

Orangutan reintroduction/rehabilitation was considered as pertaining to all activities related to the reintroduction of orangutans to their natural habitat through the processes of:

- quarantine (including physical facilities, screening for diseases and subsequent protocols, behavioural factors including enrichment)
- socialization
- halfway-house
- release into a natural habitat of protected forest which contains no wild orangutans.

5.0 Issues Identified

The following issues were identified for further discussion and review.

1. Quarantine protocols:
 - International
 - Local
2. Health Examination Protocols
 - Physical clinical examination
 - Morphological measurements
 - Laboratory tests
3. Update of Current Knowledge
 - Tuberculosis
 - Hepatitis B
 - Other diseases of orangutans
 - Hepatitis A & C
 - Other viruses
 - Malaria
 - Parasites (external and internal)
 - Nutrition
4. Genetics – geographic origin
 - implications for releasing orangutans
5. Facilities and Equipment
 - Quarantine & holding facilities
 - Diagnostic equipment
 - Clinics
 - Hospitals
 - Pathology
 - Environmental Waste Management

6. Protocols for Confiscation, Rescue and Translocation
7. Staff Health Matters
8. Tourists and visitors
9. Diseases associated with captivity
10. Public education on Zoonotic Diseases
11. Conservation of Wild Orangutan Populations – Medical and Genetic Aspects.
12. Ongoing Veterinary Committee

PART B

The Way Forward – Past, Present and Future

1.0 Introduction

It was decided that a logical way to proceed was to review past procedures and protocols that have been previously recommended for implementation. The next step would be to review what is currently being implemented by various Reintroduction Centres and to identify anomalies and/or difficulties being encountered in the application of such recommendations and to attempt to define the root causes for such problems.

The final step would be to update current knowledge and research findings and with due consideration to past and present protocols, develop recommendations for revised protocols and procedures. Hopefully this would result in healthier orangutans in Rehabilitation Centres with fewer mortalities and provide maximum protection against introduction of diseases into naïve wild populations of primates and other animal species in the release forests.

The Past:

Action Plans and Veterinary Medical Procedures & Policies

Following is the current Action Plan (Yeager C, 1999) and the current Medical Procedures (Sajuthi *et al.*, 1994) recommended since 1994. A copy of these Medical Procedures is attached to this Report (Appendix 1).

References:

- Yeager, C. (Editor) 1999. Brief Review and update in 1998 of PHVA Workshop in Medan, Sumatra 1993 (Tilson *et al.*, 1993). Presented on behalf of contributors “Orangutan Action Plan”, Briefing Book, Orangutan Reintroduction and Protection Workshop 15 – 18 June 2001, Wanariset – Samboja and Balikpapan, E. Kalimantan. Section 8, Orangutan Action Plan, p.1-21.
- Dondin Sajuthi, R.P. Agus Lelana, Joko Pamungkas and William B. Karesh, 1994. “Medical Procedures during quarantine of orangutans intended for reintroduction: updated recommendation to the Department of Forestry of the Republic of Indonesia.”

Update arising from Fullerton meeting IUCN/CBSG 1994, Section 6, Veterinary Medicine. (copy attached – Appendix 1).

2.0 The Present

Position regarding implementation of ‘Medical procedures during Quarantine of Orangutans intended for Reintroduction: (Appendix 1)

The members of the Working group summarised what was being done at various Reintroduction Centres throughout Indonesia for each of the 14 Recommendations and 6 Additional Recommendations outlined in the above 1994 document (Appendix 1). This discussion was targeted at the identified issues No. 1. Quarantine Protocols and No. 2 Health Examination Protocols.

The following are the major conclusions from this review.

(a) Implementation of Medical Procedures by Rehabilitation Centres

From the information available, there appears to be varying degrees of commonality amongst Centres in the application of the 1994 Recommendations. Minor differences occur which would not affect the outcome of objectives of a Quarantine system. However, a major difference is in the application of tests for the highly significant diseases Tuberculosis and Hepatitis B. This will be discussed further in this section (overleaf) as well as in discussions on the update on specific diseases and in the final recommendations.

(b) Length of quarantine period

The need for 180 days quarantine was questioned. This has a negative impact on Centres which face increasing numbers of orangutans for rehabilitation and overcrowding of facilities. The 6 month quarantine also delays the release of those orangutans which test negative for diseases and are suitable for early release.

To cater for these situations, the group agreed to change the recommendation to “All orangutans arriving at rehabilitation centres must undergo quarantine in isolation for a minimum period of 3 weeks and until disease tests results have been received and shown to be negative.”

(c) Medical history of Orangutans

A complete history on admission of each orangutan is necessary for inclusion in the medical record.

Obtaining a medical history for confiscated orangutans is a common problem. Usually all that is available is the location where confiscation occurred, which may not accurately reflect the true geographic origin of the orangutan. It is suggested that a standard format for the collection of a history (owner, place, origin, food, other in-contact animals etc.) be developed. Perhaps an arrangement can be made with PHKA for such details to be collected from the illegal owner at the time of confiscation, or preferably prior to the actual visit for confiscation.

(d) Chest radiographs

Not all Centres are equipped to take radiographs of the chest of orangutans on admission. Radiography is an important diagnostic tool to aid in the definitive diagnosis of tuberculosis. It is extremely important that cases of TB be detected to avoid tuberculous orangutans being released. TB currently provides the greatest threat to wild fauna populations (as well as rehabilitants) and the situation is made more complex in establishing with certainty that orangutans are tuberculous due to difficulties in interpreting ambiguous diagnostic test results.

It would be expensive and logistically difficult (if not impossible) and a potential health hazard, to have permanent radiographic facilities established in all remote areas, but methods need to be found to have orangutans with ambiguous test results and suspected of having clinical tuberculosis, submitted for x-ray examination. Local hospitals usually have radiographic facilities where collaborative arrangements may be made.

(e) Hepatitis and TB testing

The application of TB and Hepatitis testing needs to be rigorous at all Centres. Protocols for the application and interpretation of tests for both these diseases are presented in detail in the recommendations of this report.

Logistic problems need to be overcome to encourage more remote Centres to apply these tests. Most often, Mamalian Old Tuberculin (MOT) is impossible to obtain. However Drh Sajuthi at the Primate Research Centre, I.P.B. has offered to coordinate the supply of MOT with those Centres having difficulty in obtaining supplies. The same laboratory has offered to assist Centres with histological examination and processing of samples collected at necropsy.

In the case of Hepatitis B testing, test kits are available, but in order to determine if positive cases are infected with human virus (HBV) or orangutan hepadnavirus (OHV), the facility to conduct PCR-RFLP (polymerase chain reaction – restriction fragment length polymorphisms) test needs to be established in Indonesia. Drh Sajuthi, Primate Research Centre, IPB, suggested that such testing could be conducted at his laboratory.

Once Centres can determine if HBV positive tests are due to HBV or OHV (no cases of human virus have yet been identified in orangutans), then the need for long term quarantine for hepatitis becomes unnecessary.

(f) Quarantine facilities

Resources are not available (or necessary) to build high security quarantine facilities like those provided in Primate Centres. Rehabilitation Centres provide less sophisticated but effective isolation facilities. One enrichment technique, particularly for young orangutans in separate quarantine cages, is the provision of mirrors on the opposite wall so that isolated individuals can have visual, but not physical contact with other adjacent individuals.

(g) Parasite control

Control of parasites is important, especially *Strongyloides spp.* which can cause outbreaks with high mortalities under intensive housing conditions.

The availability of injectable Ivermectin has made parasite control more easy and effective. However, it is so convenient that it appears to be used almost exclusively. The risk of creating Ivermectin-resistant parasites is enhanced by using Ivermectin exclusively and treatment on a rotational basis with other anthelmintics is still highly recommended.

One major disincentive to treating orangutans with oral tablets, is the difficulty in administration, particularly with repeat daily treatments. The use of sweet cordial concentrates as a diluent for anthelmintics or in difficult cases, the use of nasal tubing, provides other therapeutic options.

(h) Vaccinations

The need for, and the role of vaccines was discussed.

The major points which emerged were:-

- There is a possible risk of cross-species transmission of organisms by the use of injectable products designed for use in humans, either arising from the major component of the vaccine or from diluents, contaminants etc.
- “Human” diseases in orangutans need to be demonstrated definitively.
- The use of vaccines in orangutans in Reintroduction Centres for Biomedical research should not be permitted. Testing of vaccines and Biomedical Research generally should be done in Primate Research Centres established for that purpose and not in orangutan colonies destined for release into the wild.
- The use of vaccines in orangutans in Reintroduction Centres is not recommended.

(i) Veterinary Committee

The group saw the need for a broad based committee of veterinarians for the purposes of continuing communications, updating of current knowledge through research and technical information and generally keeping in touch with veterinary matters relevant to the conservation of orangutans and rehabilitation/reintroduction. This proposal is taken up in detail under Issue No. 12 – *Ongoing Veterinary Committee* in this report (p.20).

3. Update of Current Knowledge

(a) Tuberculosis

There is evidence, based on reported clinical cases from zoos, primate institutes and rehabilitation centers, that captive orangutans are susceptible to infection with pathogenic mycobacteria (*M. tuberculosis*, *M. bovis* and *M. avium*) (Kuhn & Selin 1978; Jones 1982; Calle 1999) and can develop disseminating disease (Savoy 1964; Haberle 1970; Kehoe *et al.* 1984; Wells *et al.* 1990b; Calle 1999). Treatment of tuberculosis is difficult and not likely to be successful in advanced clinical cases. Long-term prophylactic treatment should be avoided since it can result in development of drug-resistant tuberculosis. There are no reports of tuberculosis occurring naturally in wild primate populations. It is therefore essential to accurately identify rehabilitant orangutans that have tuberculosis, in order to prevent transmission of the disease to other rehabilitant orangutans or to naïve wild populations of other species of primates inhabiting release forests.

However, accurate detection and diagnosis of tuberculosis in captive orangutans is difficult (Kuhn & Selin 1978; Miller, Boever & Seria 1984; Wells *et al.* 1990b; Calle 1992). Captive zoo orangutans frequently have a positive response to tuberculin testing, despite the fact they are clinically healthy and have no apparent exposure to pathogenic mycobacteria (Miller, Boever & Seria 1984). It was suspected that exposure to nontuberculous mycobacteria sensitized orangutans to mycobacterial antigens, resulting in positive tuberculin reactions due to cross-reactions between antigens present in nontuberculous and pathogenic mycobacteria (Kuhn & Selin 1978; Miller, Boever & Seria 1984; Wells *et al.* 1990b). A study on tuberculosis in rehabilitant orangutans at Wanariset by Warren (2001) diagnosed one definitive case of tuberculosis out of 129 orangutans tested, indicating a prevalence of 0.8% over four years. Tuberculosis was suspected to have been responsible for two of 96 deaths (2.1%). In total, three individuals out of 339 that arrived at Wanariset between 1991 and 1997 had either confirmed, or suspected, tuberculosis. The prevalence of tuberculosis was calculated to be 0.9% over this seven year period. This study showed that 10.1% of individuals were PCR-positive to *M. tuberculosis* complex organisms only and none showed clinical or radiographic evidence of disease. It also showed that 42.3% of the study population were PCR-positive to nontuberculous mycobacteria only. Despite a low prevalence of the disease, Tuberculosis remains a serious threat to Rehabilitation Centres. One undetected clinical case will jeopardize the entire rehabilitation colony as well as staff health and potentially, wild animal populations after release.

References - TB:

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- Savoy, J.C. 1964, Tuberculosis in a zoo collection of great apes, *International Zoo Yearbook*, vol. 5, pp. 189-192.

- Warren, K.S., 2001, Orangutan Conservation – Epidemiological Aspects of Health Management and Population Genetics, PhD thesis, Murdoch University.
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(b) Hepatitis B (HBV)

Despite common assumption there are no known cases of orangutans infected with human hepatitis B virus. There is also no evidence that HBV can be transmitted from humans to orangutans. Warren *et al.* (1999) conducted a study using serum from 195 rehabilitant and three wild orangutans. In total, 42.6% of individuals had serological evidence of exposure to HBV. Of these 78.3% seroconverted to a non-infectious state and 18.1% remained hepatitis B surface antigen (HbsAg) positive for at least one year and were considered chronic carriers. All orangutans that were serologically positive for hepatitis B surface antigen were found to be infected with a novel hepadnavirus, Orangutan Hepadnavirus (OHV). There was no evidence of hepatic disease caused by OHV infection in chronic carriers. Orangutans infected with OHV do not need to be maintained in permanent quarantine and can be released into protected forests. Therapeutic or prophylactic vaccination of orangutans using human HBV vaccines is contraindicated.

References - HBV:

- Warren, K.S., Heeney, J.L., Swan, R.A., Heriyanto & Verschoor, E.J. 1999, A new group of Hepadnaviruses naturally infecting orangutans (*Pongo pygmaeus*), *Journal of Virology*, 73: 7860-7865.
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(c) Other Diseases of Orangutans

The presence of a wide range of gastro-intestinal parasites, some of which are pathogenic, has been reported in captive, rehabilitant and wild orangutans by a number of researchers (Cummins, Keeling & McClure 1973; Rijksen 1978; Harper 1982; Frazier-Taylor, Galdikas & Karesh 1984, unpublished; Collet *et al.* 1986; Leeftang & Markham 1986; Yayasan Orangutan Indonesia 1992; Warren 2001). *Strongyloides stercoralis* is primarily a human parasite, which has a widespread distribution in regions of South America, Southeast Asia and Northern Australia (Fisher, McCarty & Currie 1993; Cook 1996) and pathogenic infections of *S. stercoralis* has been reported in non-human primates (Grove & Northern 1982; Genta 1989). *Strongyloides fuelleborni* is a naturally occurring parasite of monkeys and is zoonotic, with widespread distribution in human populations in tropical Africa and Southeast Asia (Georgi 1980; Genta, Schad & Hellman 1986). *S. fuelleborni* produces eggs in the faeces and autoinfection and strongyloidosis is less likely to occur than with *S. stercoralis* infections (Ashford & Barnish 1989). Captive orangutans, especially infants and juveniles, seem to be particularly susceptible to developing hyperinfection and strongyloidosis (Cummins, Keeling & McClure 1973; Wells *et al.* 1990a).

Harper *et al.* (1982) suggested that the high susceptibility of captive orangutans to *S. stercoralis* infections, when compared to other great apes, may have an immunological basis, since arboreal orangutans in the wild have less opportunity to become infected. *Balantidium coli* in great apes was reported as early as 1903 (Cummins, Keeling & McClure 1973) and has been detected in wild (Collet *et al.* 1986), rehabilitant (Rijksen; Collet *et al.* 1986; Warren 2001) and captive orangutans (Cummins, Keeling & McClure 1973; Frazier-Taylor, Galdikas & Karesh 1984, unpublished; Collet *et al.* 1986). *B. coli* is reported to be commensal, with balantidiosis occurring when diet, nutrition and immune factors are inadequate, or following mucosal necrosis by another primary disorder (Cummins, Keeling & McClure 1973). There is evidence that a diet rich in carbohydrates stimulates growth of *B. coli*, while a diet with

high protein content inhibits growth (van Dam 1988, unpublished). Warren (2001) conducted research on gastro-intestinal parasites in rehabilitant, released and wild orangutans. The findings showed that the highest egg counts and protozoal scores of gastro-intestinal parasites were detected in new arrivals and rehabilitants, with moderately high counts in released individuals and wild individuals had low egg counts and protozoal scores. There was a high prevalence of *Strongyloides* spp. In new arrivals, rehabilitants, released and wild individuals. *Strongyloides* spp. egg counts were lower in wild orangutans than in other groups of orangutans. *Trichuris trichura* was found in rehabilitant and released orangutans but not in wild orangutans. *Strongyloides* spp., *Strongyle* sp. and *B. coli* were present in wild individuals. The study showed that 77.8% of orangutans arriving at rehabilitation centres were already infected with at least one genus of gastro-intestinal parasite on arrival. In the absence of effective anthelmintic programs gastro-intestinal parasites, particularly *Strongyloides* spp. and *B. coli*, were a significant health problem for orangutans at reintroduction centres. There was a high level of transmission of *Strongyloides* spp. and *B. coli* between individuals housed at the reintroduction centre. In this study, in the absence of effective medication, strongyloidosis was the primary cause of death of rehabilitant orangutans (Warren 2001). Incorporation of ivermectin into the anthelmintic program effectively controlled *Strongyloides* spp. infections. Effective parasite control programs with rotational use of anthelmintics, in conjunction with appropriate husbandry practises and enclosure design are essential for proper health management at reintroduction centres. Anthelmintic treatment immediately prior to release is important to ensure rehabilitants do not become reinfected prior to release and introduce exotic parasites to naïve wild populations of animals in release forests.

A serological survey of rehabilitant orangutans revealed a high prevalence of antibodies cross-reactive with human viruses (Warren *et al.* 1998). The study involved ELISA screening for human hepatitis A virus (HAV), human immunodeficiency virus (HIV), simian immunodeficiency virus (SIV), simian type D retroviruses (SRV types 1 to 3), human T-lymphotropic virus (HTLV types I and II) and human herpes simplex viruses (HSV types 1 and 2). The prevalence of HAV was 34.9%, while the prevalence of HSV, SRV and HTLV was lower, but still considered significant. There was no evidence of SIV or other HIV-related lentiviral infections. HAV infection results in acute, self-limiting disease in primates and is rarely fatal, except in cases of underlying liver disease (Nainan *et al.* 1991). HAV is endemic in Southeast Asia and it can not be ruled out that orangutans with antibodies to HAV became infected as a result of human contact. However, the possibility of indigenous HAV infection can not be excluded since simian HAV infections in other primates have been reported (Nainan *et al.* 1991). The origin of HAV infecting orangutans has yet to be determined. Herpesviruses have been isolated from a wide range of primates (Eberle & Hilliard 1989; Kalter & Heberling 1990; Eberle 1992; Eberle & Hilliard 1995). In the natural hosts these viruses cause oral and genital lesions similar to the HSV infections in humans, but do not usually cause severe illness in adults. However, severe, usually fatal disease involving the central nervous system can develop when neonates or species other than the natural host become infected with these viruses (Eberle & Hilliard 1989; Eberle & Hilliard 1995). Previous research conducted on captive apes in zoos found a high incidence of animals seropositive for HSV (Eberle & Hilliard 1989). In the study conducted by Warren (2001) there was no clinical evidence of disease in any individual that was seropositive for HSV and the transmission of herpesvirus infections between individual orangutans appeared low.

It is presumed that an indigenous herpesvirus in great apes would give positive antibody cross-reactivity to human HSV antigen in ELISA tests. Further studies are required to determine the nature of the herpesvirus infections in orangutans. The orangutans that were seropositive for HTLV infection in the study by Warren *et al.* (1998) were shown to be infected with a naturally occurring simian T lymphotropic virus (STLV) (Verschoor *et al.* 1998). SRV infection may cause immunodeficiency disease, retroperitoneal fibromatosis and subcutaneous fibrosarcoma in macaques (Grant *et al.* 1995). Type D retroviruses have been detected in species of monkeys from the Old World. While infection can result in serious disease in macaques, its ability to cause disease in baboons or other primates remains unknown

(Grant *et al.* 1995). D-type retroviral infections have not previously been detected in great apes and have been thought to be restricted to Old World Monkeys. Transmission may occur between macaques and orangutans in the wild because they share the same habitat, or in captivity when housed together. The possibility of a natural SRV infection in orangutans can not be ruled out. Simian lentiviruses have been found to be naturally occurring only in African primates, therefore it is unlikely that confiscated orangutans would have been exposed to SIV.

Orangutans that appear to be suffering clinical signs of malaria have been reported at rehabilitation centres (Garriga, personal communication, 2001; Warren, personal communication, 2001). A juvenile orangutan with clinical signs of malaria responded to human medication according to a human treatment regime (Warren, personal communication, 2001). Malaria organisms were detected by immunofluorescence of blood smears by Warren (unpublished, 1998), however the species of malaria could not be determined. None of these infected orangutans showed clinical signs. There is evidence of species-specific malaria in primates and a naturally occurring type of malaria in orangutans. Studies in laboratories have shown that lab primates that have been infected with human malaria need to be splenectomized before they will show any clinical signs of malaria (Warren, unpublished, 1998). This implies that clinical cases of malaria in orangutans at rehabilitation centres, if they occur, are probably rare events and may be associated with individuals that are immunosuppressed.

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(e) **Nutrition**

Evidence of fatty liver degeneration on post-mortem examination of rehabilitant orangutans may indicate an inadequate diet. Attention should be made to ensure that appropriate diets are provided that meet the physiological and caloric requirements of orangutans. Inappropriate nutrition can predispose orangutans to disease conditions.

4. Genetics

The determination of genetic variation between isolated Bornean populations has been stated as essential for both the management of orangutan reintroduction projects and the planning of conservation strategies to preserve the remaining wild populations (de Boer 1982; Courtenay, Groves & Andrews 1988; Janczewski, Goldman & O'Brien 1990; IUCN/SSC 1993; Uchida 1996; Xu & Arnason 1996). Studies of morphological features have indicated that the extent of inter-population differentiation within Borneo may approach that between Borneo and Sumatra (Groves, Westwood & Shea 1992; Uchida 1998). A molecular study conducted by Zhi *et al.* (1996) did not detect geographically defined genetic variation within Borneo. The assessment of molecular variation within Bornean orangutans requires the use of a reasonable number of samples of known origin analysed with a highly informative genetic locus. Warren *et al.* (2001) conducted a major study to determine genetic variation of isolated populations of Bornean orangutans using MtDNA analysis of the control region, which is considered a good genetic marker for genetic studies concerning subspecific or inter-population variation (Stoneking & Wilson 1989; Morin, Moore & Woodruff 1992; Morin *et al.* 1993; Woodruff 1993; Muir *et al.* 1994; Uchida 1996). The findings of this recent research support the argument that Bornean and Sumatran orangutans show sufficiently wide genetic differences that they warrant reclassification as separate species, rather than as subspecies (Warren *et al.* 2001). The research identified four genetically distinct sub-populations of Bornean orangutans in East Kalimantan; southwest and Central Kalimantan; northwest Kalimantan and Sarawak; and Sabah. These findings strongly support the need for significant areas of protected habitat in each of these regions to ensure their survival and preserve genetic diversity of wild Bornean orangutans.

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5. Facilities and Equipment

As pointed out under Issues (1) Quarantine and (2) Health Examination Protocols, certain deficiencies in facilities and equipment and also communications, can directly and indirectly adversely affect the implementation of quarantine, health and diagnostic protocols.

Although the working group is not suggesting that fully equipped modern veterinary hospitals be established at all Rehabilitation Centres, support needs to be provided for the essentials to do a good job, and back-up support needs to be found for procedures which cannot be done on-site, e.g. histopathology, complex serological and DNA testing, radiographic expertise and machines and even the supply of difficult-to-obtain diagnostic reagents such as Mammalian Old Tuberculin (MOT). Some suggestions to overcome these problems of back-up support have been made under issues (1) Quarantine and (2) Health examination protocols, 2(e) Hepatitis and TB testing.

The Veterinary Clinic/Hospital needs to be able to have sufficient instrumentation to support the Quarantine facility with diagnostic procedures. Instrumentation should be low maintenance and reliable and as commonly used in private practices (e.g. IDEXX Dry Reagent bench-top clinical pathology test machine), with requirements for automation being referred to a fully equipped diagnostic laboratory off-site.

Instrumentation for clinical pathology should be available on-site for CBC (haematology), urine analysis (specific gravity, pH) and blood chemistry (Serum chemistry panel of urea, creatine, AST, ALT, SGT). A good light microscope should be available for diagnostic work and for faecal analysis (faecal egg counts) together with reagents and minor equipment (counters etc.)

A small necropsy facility should be available separate from the Veterinary Clinic and Quarantine facility. It should be treated as a secure room and regarded as an infectious area where necropsies can be performed in a safe manner using double gloving, masks and protective clothing and only entered by trained staff. Sample collection material should be available (pipettes, bottles, swabs, formaldehyde etc), plus basic Necropsy instruments (knives, forceps, scissors, saws, cutters etc) and antiseptics and cleaning materials. Effluent should be drained separately into a necropsy septic tank.

Cadavers and post mortem material should be disposed of, preferably by incineration, or by deep burial.

6. Protocols for confiscation, rescue and translocation

It was decided that this topic could not be covered adequately in the time available and was deferred for discussion at a later meeting.

7. Staff Health Matters

- Staff should only be considered for employment if they are negative for Tuberculosis (based on chest X-Ray) and negative for HBsAG.
- Staff working directly with Orangutans or within facilities should wear protective clothing and boots.
- All staff that work with Orangutans should not carry diseases such as Tuberculosis and Hepatitis that can be transmitted to Orangutans. Staff suffering temporary ailments such as “cold sores” or influenza should not have contact with orangutans for the duration of their illness,
- Annual Chest Radiographs should be taken by all staff
- Staff should be vaccinated against HBV (if no immunity exists), Rabies and Tetanus.
- Appropriate anthelmintics should be given periodically to all staff.
- Staff need to be given training on safe working methods when handling or working with Orangutans and on the use of protective devices to prevent zoonoses, such as gloves and masks.

8. Tourists and visitors

- Tourists and visitors should not have direct contact with Orangutans.
- Researchers and volunteers should have health clearances for tuberculosis and Hepatitis B and have current vaccinations for Hepatitis.
- On arrival at the Centre they must wait for an initial period of one week during which they have no direct contact with Orangutans.
- Researchers, volunteers and tourists should be made aware that they should voluntarily avoid orangutans during temporary illnesses such as “cold sores”, influenza etc.
- Researchers and tourists should avoid contact with released rehabilitant orangutans in forests during the course of their work or on jungle treks.

9. Diseases associated with captivity

It was decided that this topic could not be covered adequately in the time available and was deferred for discussion at a later meeting.

10. Public education on Zoonotic diseases

The group discussed the risks of Zoonotic diseases (diseases transmitted from animals to humans). It became clear that of equal importance is the risk of transmission of diseases from humans to non-human primates (anthropozoonotic diseases). The latter could be serious human diseases, but equally, relatively minor diseases in humans such as influenza and herpes simplex (“cold sores”) could have serious consequences if passed on to orangutans.

It was agreed that a public education campaign should be mounted to enlighten the public (villagers, researchers, staff, tourists and persons keeping pet orangutans) about the risks to both humans and orangutans. Use could be made of posters, brochures and lectures as communication avenues. The objective should be enlightenment and respect and not a scare campaign, but it may have a positive effect on the conservation of orangutans.

Brochures should also be distributed to persons keeping orangutans as pets, at, or before, the time of confiscation.

1. Conservation of Wild Orangutan Populations – Medical and Genetic Aspects.

According to current Indonesian Forestry regulations, confiscated ex-captive orangutans can only be released into suitable habitat that does not contain wild orangutans and is geographically isolated from forest that has wild orangutans (Appendix 2).

Prior to the establishment of these regulations, earlier methods of orangutan rehabilitation had usually involved releasing orangutans of unknown genetic origin and health status into national parks that contained wild orangutan populations. The ex-captive orangutans consorted and copulated with wild orangutans (Yeager 1997). It has been reported that ex-captive orangutans have been infected with respiratory and skin diseases by humans (Rijksen 1978; Yeager 1997).

There was also concern that release of rehabilitant orangutans into existing wild populations may disrupt the carrying capacity of the local wild orangutan population.

The current regulations were created due to the concern that release of rehabilitant orangutans of unknown disease status or genetic origin, into forests containing local wild orangutan populations, could be detrimental to these populations, and the risks associated with introduction of diseases (Chivers 1991; Sajuthi et al. 1991; Sugardjito & van Schaik 1991; Yeager 1997) and creation of genetic hybrids in the wild could not be justified (Yeager 1997).

According to IUCN the orangutan has been reclassified as two species, *Pongo pygmaeus* and *Pongo abelli*, due to the significant genetic variation between Sumatran and Bornean orangutans. There are also at least four genetically distinct populations of Bornean orangutans and the genetic diversity of these four populations should be maintained.

The long-term effects of orangutan rehabilitation on not only other primate species, but also on flora and fauna in the release forests, remain unknown. Determination of the suitability of a habitat as a release forest should take into account the existing fauna and flora in the area, and the vulnerability of such flora and fauna. Compliance with quarantine and disease testing recommendations for orangutan rehabilitation, should minimise the potential for transmission of infectious diseases contracted during captivity into naïve wild fauna populations.

Further studies on the prevalence of diseases in wild populations should be encouraged not only to monitor the effect of habitat loss on the remaining wild populations, but also to increase the knowledge of diseases that are present in wild orangutans. Research on the health status of wild orangutans can also provide base-line data for comparison with captive populations. Determination of the health status of wild populations of orangutans can enable appropriate management strategies to be developed to conserve these populations.

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2. Ongoing Veterinary Committee

The Working Group realised the value of such a representative group of people with similar interests and with expertise in different aspects of orangutan conservation and rehabilitation, having the opportunity to meet and discuss problems, update on and share current knowledge.

It is proposed that an on-going Veterinary Committee be constituted with the objective of reviewing Veterinary matters and problems associated with Orangutan Conservation and to monitor technical developments. This Veterinary Committee should come under the umbrella of an Alliance concerned with Orangutan Conservation and Rehabilitation which may be established following this workshop.

The Committee should be called *Komisi Doktor Hewan untuk Orangutan* (Veterinary Committee for Orangutans) and comprise initially the members of the Working Group (Drs Sajuthi, Swan, Warren, Heriyanto, Garriga, Nente, Nurcahyo and Faitova).

The first meeting is proposed to be convened in Bogor in the first half of 2002. Other veterinarians with orangutan experience or expertise may be invited to the meeting.

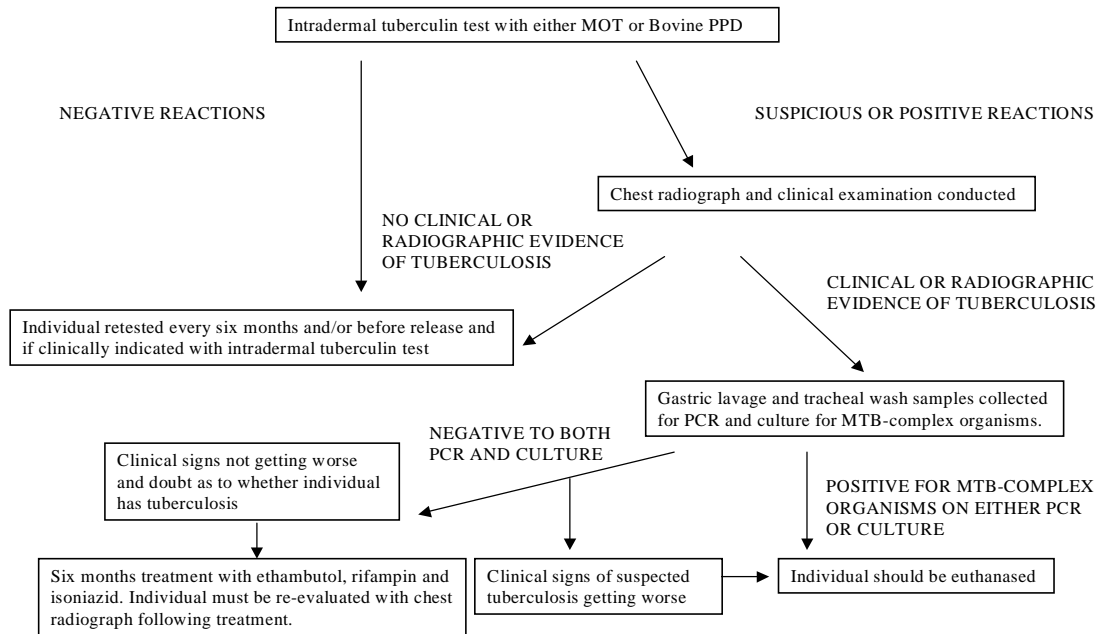
PART C

Recommendations by the Veterinary Working Group

1. Orangutans must be reintroduced into suitable habitat, within their historical range, that does not contain, and is geographically isolated from, wild orangutan populations.
2. All orangutans arriving at rehabilitation centres must undergo quarantine in isolation for a minimum period of 3 weeks and until test results have been received and shown to be negative. Animals diagnosed with clinical disease based on the test results should be maintained in quarantine for further clinical investigation. Attention should be paid to maintaining psychological and behavioural well-being in the face of this isolation. Orangutans that are transported to the rehabilitation centre together in the same cage can be housed together during quarantine.
3. Government authorities from PHKA should try and gather as much information as possible about the history of individual orangutans that are known to be held in captivity. It has been suggested that attempts to gather such information should be done prior to confiscation. In all cases it is important that the exact location of confiscation by authorities is recorded including origin if known.
4. The orangutans will be placed in separately housed quarters of sufficient space, with appropriate ventilation and provision of food and water. Waste water from the facilities should be channelled into a filter tank for waste management. Bodies of dead orangutans should be disposed of following post-mortem examination by incineration (preferably) or by deep burial.
5. On arrival all orangutans must be given a complete physical examination and receive a subcutaneous implant of an identifying numbered microchip, medial to the left scapula. Plucked hair samples should be collected in a sterile manner for genetic analysis to establish species of origin.
6. During the quarantine period all orangutans must have blood collected for cell blood count (CBC) and hepatitis testing, and serum should be stored frozen in a serum bank.
7. All incoming orangutans must be tested serologically for HBsAg and HBsAb. Individuals that are positive to HBsAg should have serum samples tested by PCR-RFLP to differentiate if the hepatitis infection is OHV or HBV. Orangutans infected with OHV do not need to be maintained in quarantine for hepatitis and can continue with the other stages of quarantine and the rehabilitation process. Individuals that are negative to HBsAg during quarantine do not need to be maintained in quarantine. However they should be retested for HBsAg six months after arrival.
8. During quarantine orangutans will be tested by intradermal tuberculin test at a recommended site (preferably intrapalpebral) with either MOT or Bovine PPD. If the tuberculin test result is negative then the individual will be retested every 6 months and/or before release or if clinically indicated. If the individual has a suspicious or positive reaction then a chest radiograph and clinical examination should be conducted. If there is clinical or radiographic evidence of tuberculosis then gastric lavage and tracheal wash samples should be collected for PCR and culture for MTB-complex organisms. If positive for MTB-complex organisms on either PCR or culture then the individual should be euthanased. If negative to both PCR and culture then the individual should remain isolated in quarantine and PCR and culture for MTB-complex organisms and chest radiograph should be repeated after two months. If the individual is positive to either PCR or culture, then the individual should be euthanased. If the individual is still negative to both tests and the clinical signs of suspected tuberculosis are getting worse then the individual should be euthanased. If the clinical signs are not getting worse and there is doubt as to whether the individual has tuberculosis, then the individual should be placed on six months treatment with ethambutol, rifampin and isoniazid. The individual must be re-evaluated with chest radiographs following treatment.

SeeDiagram

Diagram 1: Protocol for tuberculosis testing during quarantine



9. Given the current poor knowledge of diseases affecting ex-captive and wild orangutans in particular, the use of vaccines in orangutans in Reintroduction centres is not recommended.
10. All animals which die during or following the quarantine period will undergo a full necropsy and Histopathological examination. No animals in contact with the individual which died can be released from quarantine until the cause of death, and all related abnormal findings are reported in writing by a pathologist to supervising authorities for quarantine procedures.
11. All individuals will have faecal samples examined on arrival for gastro-intestinal parasites and will be treated regardless of findings. Individuals will be treated every three months with rotational use of multiple anthelmintics or when clinically indicated. Individuals will have faecal samples examined prior to release and will be treated regardless of the findings. This final anthelmintic treatment should be given and completed between 24-48 hours prior to release, in order to minimise the chances of re-infection before release.
12. Diagnostic tests for other diseases (Salmonella, Shigella, Campylobacter, Klebsiella) are optional depending on specific clinical assessments.
13. Further screening for HAV and HCV may be considered necessary, depending on clinical circumstances.
14. Genetic analysis for species identification (Sumatran vs Bornean) will be performed on all individuals prior to release. Individuals identified by genetic analysis as Sumatran or Bornean orangutans must be reintroduced onto their respective islands of origin.
15. The establishment of large “rehabilitant” populations, involving mixing Bornean orangutans from different geographic origins together in release forests is considered to be a suitable management solution for release of rehabilitants. [Note: One reviewer (not a participant of this working group) states that this is not a suitable solution from a genetic or ecological perspective].
16. Wild individual orangutans, that are not brought into rehabilitation centres but are trans-located from one site to another (due to crop-raiding, fires, etc), should not be translocated into different

- geographic regions, other than their region of origin. Translocation should not occur without a thorough assessment of the impact of the translocation on the resident orangutan population.
17. Thorough and complete records should be kept at all times to facilitate proper tracking and control of animals, study of diseases and treatments, and to facilitate reporting. Quarterly reports will be provided to supervising authorities, and copies of all reports and records will be maintained in a central location.
 18. Thorough training and health surveillance of quarantine staff should be a high priority. Poorly performing or ill staff members should not be permitted to work with animals. Accurate records of surveillance will help to track any zoonotic episodes.
 19. A manual containing all operating procedures should be prepared and kept on-site at each facility. This will delineate all quarantine procedures listed above as well as those defining the activities of support and maintenance staff. An updated copy of this manual or these procedures must be kept on file with the Department of Forestry.
 20. All quarantine facilities, daily procedures and routines, and staff management procedures should meet standards of primate quarantine and handling accepted internationally and as recommended by the *Komisi Doktor Hewan untuk Orangutan* (Committee of Veterinarians for Orangutans). These standards must be met at any facility used for the quarantine and rehabilitation of orangutans.
 21. The *Komisi Doktor Hewan untuk Orangutan* (Veterinary Committee for Orangutans) be constituted under an Alliance for Orangutan Conservation and Rehabilitation and to meet periodically to discuss and update veterinary issues relating to orangutan conservation. It is proposed the membership initially comprise the current members of the IUCN Workshop Veterinary Working Group and to report to IUCN/CBSG and the Department of Forestry of the Republic of Indonesia.
 22. These recommendations should be forwarded by IUCN to the Department of Forestry of the Republic of Indonesia for action.

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APPENDIX 1

SECTION 6: VETERINARY MEDICINE

MEDICAL PROCEDURES DURING QUARANTINE OF ORANGUTANS INTENDED FOR REINTRODUCTION; UPDATED RECOMMENDATION TO THE DEPARTMENT OF FORESTRY OF THE REPUBLIC OF INDONESIA

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ABSTRACT

Efforts for orangutan reintroduction from rehabilitation centres in Indonesia have been encouraged for all parties concerned with this species. However, findings of anthroponotic diseases in confiscated pet orangutans have demonstrated a significant reason to include medical management of orangutans in addition to genetic evaluation and management in orangutan rehabilitation will be discussed to ensure that only healthy animals are released.

The confiscation of pet orangutans and their release back into a native habitat, allowing contact with naturally occurring populations, poses a serious threat to the health of wild populations of orangutans and other indigenous species. In order to mitigate this risk, serious efforts must be made to develop rehabilitation programs aimed at release. At this point in time, we can not in good consciousness, recommend the release of any orangutans into areas where viable populations of wild orangutans exist. Additionally, we can not recommend the transfer to a rehabilitation program or release of any ill or possibly chronically infected individuals. To ensure that only healthy animals are released, a period of quarantine and evaluation is necessary.

To ensure health, strict medical protocols are necessary and must be followed in a concerted and rigorous fashion. The following recommendations are intended to serve as a basis for a more comprehensive program, which will be continuously refined according to ongoing experience and updated medical knowledge.

Before entrance into a rehabilitation program, orangutans should undergo the following:
A minimum quarantine period of 180 days, with records, observations, tests, and treatments as outlined below.

1. Upon admission to quarantine, a complete history should be obtained from the previous owner and a medical record initiated.
2. A 1-week stabilization period to allow close scrutiny of behavioural patterns, food preferences, and general condition and to allow the animal to adjust to the new environment. Observed medical problems may warrant immediate examination and attention.
3. A complete physical examination and permanent identification (tattoo and other methods as appropriate) must be performed as soon as the animal has adjusted to quarantine or within 1 week of arrival (the sooner of the two). Follow-up examination will be done anytime chemical restraint is necessary for routine testing (e.g., TB or blood tests) or as schedule dictates if animals are small enough to handle without anesthesia).

4. Chest radiograph, Hepatitis-B surface antigen test, CBC and chemistry panel, and serum banking will be done upon initial examination and again at the end of quarantine.
5. Intradermal TB test on the upper eyelid, utilizing mammalian old tuberculin will be performed on initial examination and again on the second, third, and sixth month of quarantine.
6. The animals will be placed in separate housing of sufficient space and with separate air and water circulation. Attention should be paid to maintaining psychological well-being in the face of this isolation.
7. Young animals may be housed in groups, though they must both clear quarantine together at the end. Accommodation should be made on case-by-case basis to provide more intimate human contact as needed with appropriate disease precautions considered.
8. Fecal bacteriological examination for Salmonella, Shigella, and Campylobacter should be performed on samples collected at the initial examination and again at the end of the third and sixth month of quarantine.
9. Fecal parasite examination should be done on samples collected during the initial examination and again at 2, 4, and 6 months of quarantine. The last examination should be done 14 days prior to the end of quarantine.
10. Routine anthelmintic treatment will be done every month using ivermectin, pyrantel pamoate, fendendazole, mebendazole, and/or any other appropriate medications. A rotating schedule may be used if necessary. Routine antiprotozoal treatments may be incorporated into the schedule if protozoal parasites are commonly found in the confiscated animals as a whole.
11. Vaccination against Polio, DPT, Measles, Hepatitis-B, and rabies should be performed as appropriate for each disease entity and only after blood sampling and adequate serum banking has occurred.
12. Genetic analysis for subspecific identification will be performed using karyotypic and electrophoretic methods at some time during the quarantine period.
13. In light of the current lack of available information regarding the definitive diagnosis, treatment, and epidemiological implication of various infectious diseases (most notably Tuberculosis and Hepatitis B), a positive test to any or all of these will disqualify an animal from release into areas with wild primates.
14. All animals which die during or following the quarantine period will undergo a full necropsy examination and histopathology. No animals in contact with the individual which died can be released from quarantine until the cause of death and all related abnormal findings are reported in writing by a pathologist to supervising authorities for quarantine procedures.

ADDITIONAL RECOMMENDATIONS

1. Thorough and complete records should be kept at all times to facilitate proper tracking and control of animals, study of diseases and treatments, and to facilitate reporting. Quarterly reports will be provided to supervising authorities, and copies of all reports and records will be maintained in a central location.
2. Thorough training and health surveillance of quarantine staff should be a high priority. Poorly performing or ill staff members should not be permitted to work with the animals. Accurate records of surveillance will help to track any zoonotic episodes.
3. A manual containing all operating procedures should be prepared and kept on-site at each facility. This will delineate all quarantine procedures listed above as well as those defining the activities of support and maintenance staff. An updated copy of this manual or these procedures must be kept on file with the Department of Forestry.
4. Procedures should be developed to deal with and expand on all situations involving animals that “drop-out” of or fail the quarantine process as described above.
5. All quarantine facilities, daily procedures and routines, and staff management and procedures should meet the standards or primate quarantine and handling accepted internationally in the biomedical field. Inadequate facilities or procedural aspects will invalidate all of the efforts for disease control or surveillance. These standards must be met at any facility used for the quarantine of orangutans.
6. A special panel of veterinarians, public health experts, ecologists, and others should be formed under the supervision of the Department of Forestry of the Republic of Indonesia, to evaluate current and ongoing research that will facilitate the development of appropriate protocols and plans for dealing with the health issues related to orangutan rehabilitation.

APPENDIX II

KEPUTUSAN MENTERI KEHUTANAN NOMOR: 280/KPTS-II/95

PEDOMAN REHABILITASI ORANG UTAN (*Pongo pygmaeus*) KE HABITAT ALAMNYA ATAU KE DALAM KAWASAN HUTAN.

MEMUTUSKAN:

Menetapkan:

- Pertama: Menetapkan Pedoman Rehabilitasi Orang Utan (*Pongo pygmaeus*) ke habitat alamnya atau ke dalam kawasan hutan.
- Kedua: Pola rehabilitasi mengutamakan proses peliaran kembali secepat mungkin dengan memperhatikan unsure genetis, medis dan pembentukan kelompok orang utan serta habitat dan daerah jelajah.
- Ketiga: Kegiatan rehabilitasi Orang Utan (*Pongo pygmaeus*) harus menemuhui ketentuan sebagai berikut:
- e.) Adanya penetapan lokasi kawasan hutan yang jelas berdasarkan Keputusan Menteri Kehutanan:
 - f.) Kawasan hutan dimaksud dinilai memenuhi persyaratan yang antara lain:
 - Cukup luas sesuai dengan daya dukungnya.
 - Cukup makanan.
 - Sumber-sumber air yang cukup.
 - Terhindar dari gangguan.
 - g.) Kawasan hutan sebagia habitat diusahakan yang sebelumnya tidak terdapat orang utan dan tidak menyambung dengan kawasan yang sudah ada populasi orang utan.
 - h.) Idenifikasi jenis, dan asal-asal satwa, serta identifikasi medis/kesehatan.
- Keempat: Tahapan rehabilitasi dapat dilakukan melalui:
- e.) Identifikasi species dan asal-asal;
 - f.) Pemeriksaan medis;
 - g.) Pelatihan peliaran melalui pembentukan kelompok;
 - h.) Identifikasi habitat menyangkut potensi flora dan fauna yang dapat mempengaruhi kegiatan rehabilitasi.
- Kelima: Evaluasi terhadap kegiatan rehabilitasi orang utan dilakukan setiap priode tertentu (setiap akhir tahun).

Source: Suryohadikusomo, D (1995). Keputusan Menteri Kehutanan.

Nomor: 280/Kpts – II/95, Departemen Kehutanan, Jakarta

APPENDIX III

DECREE BY MINISTER OF FORESTRY NUMBER: 280/KPTS-II/95 (English Translation)

THE MINISTRY OF FORESTRY DECREE CONCERNING REINTRODUCTION OF ORANGUTANS INTO NATURAL HABITAT.

- First: Creation of new regulations regarding Rehabilitation of Orang Utan (*Pongo pygmaeus*) back to natural habitat or forest areas.
- Second: The process of returning ex-captive orangutans to natural habitat must be done as quickly as possible focusing on genetic aspects, medical aspects and socialisation of orang utans and habitat factors.
- Third: Rehabilitation of orang utans must be conducted according to the following regulations:
- e.) The area of forest must be suitable according to the regulations by the Ministry of Forestry
 - f.) Factors determining suitability of forest area include:
 - adequate size to support the carrying capacity
 - adequate food sources
 - adequate available water
 - should be free from disturbance
 - g.) It should be established that the area of forest does not have a wild population of orang utans or connect to another region that has wild orang utans.
 - h.) Identification of genetic type and origin of orang utans
- Fourth: The stages of rehabilitation should involve:
- e.) Identification of the species and origin
 - f.) Medical Examination
 - g.) Formation of socialisation groups
 - h.) Identification of aspects of flora and fauna in the habitat affecting rehabilitation.

Translation of excerpt from Suryohadikusomo (1995)

Orangutan Reintroduction and Protection Workshop

15-18 June 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan,
Indonesia



FINAL REPORT

Section 4

Habitat and Species Protection Working Group Report

Habitat and Species Protection

Introduction

The habitat conservation working group was given the task of evaluating the current situation regarding orangutan conservation, and exploring possible solutions. At present, orangutan populations in Sumatra and Borneo are rapidly declining. In Sumatra, recent research has concluded that around 46 % of the orangutan population has been lost as a direct result of habitat loss since 1993. The situation is worse in Borneo— if only in terms of numbers lost. The group first attempted to highlight the principle causes of this decline. We then explored some of the underlying mechanisms and attempted to offer workable solutions.

The following list represents all the factors that were identified by the workshop attendees as orangutan conservation issues:

- Legal and Illegal Logging
- Law enforcement
- Encroachment
- Potential role of resource extraction companies in protection

Habitat loss/destruction

Orangutan survival

Law enforcement

Habitat protection

New legal way to protect areas

Save natural habitat

Political will

Lack of local government support

Corruption leading to inability to protect habitat

Protect prime orangutan habitat

Law enforcement

Illegal logging

Habitat fragmentation

Commercial exploitation

Orangutan conservation issues

Monitoring and accountability for orangutan conservation

Implementation of conservation goals (including PHVA) as well as law enforcement goals

Underlying causes of habitat degradation

Protection of wild orangutan populations

Habitat regeneration

Gold mining and agriculture

Indiscriminate logging

Issues added by the working group:

Legal logging

Research activities

Trade and capture of infant orangutans

Distribution of orangutan population in Borneo and Sumatra

Inventory and monitoring of habitat

Conservation in secondary forests

Conservation in unprotected forests

Status of protected areas

There was a general consensus among the working group that habitat loss was the primary cause of orangutan population decline. Other major factors were inappropriate land-use policy decisions, hunting, and fire. Additional problems were considered to be the potential for losses due to natural causes (e.g. disease outbreaks, and demographic factors [which would result in local extinctions if populations were too small, e.g. as a result of hunting of breeding females]). The following subsections relate to discussions of these topics and attempts to identify any solutions.

Population estimates

One of the first things attempted by the group was to discuss recent population estimates. Two main problems were highlighted.

1. Altitudinal limits-especially in Borneo.

Using an altitudinal limit of 500 m, Meijaard and Dennis (in prep.) have reconsidered earlier data (Rijksen and Meijaard, 1999) and determined that there are 173 unconnected forest polygons in Borneo that still contain orangutans. Of these only one is larger than 10,000 km² (in West Kalimantan?), three are larger than 5,000 km², 19 are larger than 1,000 km² and 77 are larger than 100 km². Some large sections of these areas comprise peat swamp forests but the dominant habitat type is lowland dipterocarp forest.. More than 80 are smaller than 100 km² (10,000 ha). This shows that large viable populations of orangutans in Borneo are few. Meijaard and Dennis also offered a tentative estimate for Bornean orangutan population of ca. 18,500, based on these findings. However, it was suggested by one group member that the maps produced by Meijaard and Dennis underestimate the number of orang-utans, because they are based solely on satellite images of forests, the argument being that there were still large numbers of orangutans eking out an existence in badly damaged habitats (e.g. by surviving on poor diets comprising bark, palm hearts etc.). However, it is likely that many of these orangutans will eventually succumb to malnutrition and so in the longer term, the findings of Meijaard and Dennis would probably hold true.

500 m is commonly used as the cut-off point, above which Bornean orangutans probably do not exist in viable populations. Whether or not 500 m is really a cut-off point for orangutan distributions was briefly debated. The potential error in estimating numbers that could result from altitudinal variation was considered a significant factor for consideration. Orangutans certainly do occur above this altitudinal limit. In Gunung Palung they can be found up to 1200 m and in Sabah up to 1000 m. However, whether or not these animals could survive as viable breeding populations at these altitudes in the long-term was questioned, especially if denied occasional access to lower altitude forests. Factors likely to affect the altitudinal limit in a particular area where considered to include proximity to the coast, altitude effects, and geology among others.

Despite the presence of orangutans at these altitudes there is considerable evidence that orangutan densities decline strongly with altitude. In order to try to obtain more accurate information in altitudinal limits in different areas the group recommended nest surveys at high altitudes.

2. Viable population sizes

The issue was raised about minimum viable population sizes. This appeared to be a key issue for consideration, but there does not seem to be any consensus on how large a population would need to be to be considered viable in the long term. It is a question that can only be examined with a sound understanding of orangutan social organisation, and ranging patterns, and hence gene-flow within populations. Unfortunately, these topics are still not fully understood. There have been some recent advances, however, (e.g. information on the ranging behaviour and social organisation of orangutans at Suaq Balimbing; Singleton and van Schaik, in press and Singleton and van Schaik, in review). For this reason it is perhaps appropriate to suggest that the question of whether or not minimum viable populations can be estimated ought to be re-examined.

Fundamental topics discussed

Orangutan habitat

Consideration was given to the question of whether or not there was any justification in concentrating on any particular habitat type for future conservation efforts. Two broad habitat types were initially distinguished as follows:

a) Primary

- Priority (ideal) hardest to protect

b) Secondary

- Lower density, generally, but some studies show higher densities (Sabah – stable for 3 years, breeding population?)
- Fruit Production increased
- Hunting major issue
- Will densities fall over time?

The initial view was that primary habitats should receive priority. This was generally agreed upon given the numerous examples of studies that have shown that orangutan densities are normally reduced by any kind of logging. However, recent research in Sabah (by Lackman-Ancrenaz) appears to have identified an area of secondary forest that sustains unusually high densities of orangutans. Some possible explanations for this were briefly discussed. It was considered possible that this could be only a temporary phenomenon. It was also agreed that by their very nature secondary forests must vary considerably in their value to orangutans, depending largely on the scale of logging and the tree species that are removed. Thus, whilst some secondary forests may indeed offer opportunities for orangutan conservation, more surveys and research would be needed before this could be known in any one particular location. There was general agreement therefore that conservation efforts should continue to be directed at remaining primary forests.

It was also mentioned that research into ways of improving the regeneration of secondary forests would be extremely valuable, e.g. by supplementary planting of particular tree species within the forests, such as principle fruit trees etc., to see if the carrying capacity of these forests could be increased more rapidly than by natural recovery alone.

The problem of increased hunting pressure in secondary forests was also raised. Since they have already been 'opened up', often with easy access to local communities via networks of logging roads and trails, hunting of orangutans might be expected to be a greater risk here than in primary forests.

Protected versus unprotected areas

As well as the distinction between primary and secondary forests, remaining orangutan habitat can also be divided into protected and unprotected forests. Some initial issues discussed regarding protected areas included the suitability of the existing boundaries for orangutan conservation. Gunung Leuser National Park in Sumatra was cited as a good example of inappropriate boundaries. Most Sumatran orangutans exist outside the original National Park and much of the terrain within it is high altitude. Questions raised by the group included: Is protection guaranteed? Can we identify any new areas that should be protected? Are protected areas the only way to conserve orangutans?

Outside of protected areas orangutans often exist in logging concession areas where the removal of timber is legal. Opportunities for conserving orangutans in these areas were briefly discussed. It was noted that the orangutan is a protected species under Indonesian and Malaysian law, wherever it is found. Some opportunities to help conserve orangutans were considered to exist via improved management of logging concessions, particularly through enforcing existing laws that stipulate that logging concessions should be left to regenerate after operations have ceased (and by planting trees within selectively logged forests to replace those removed; see above).

An attempt to further describe orangutan habitat identified the following as key factors for consideration. Lowland Dipterocarp forests were seen as a major habitat type for orangutans. Freshwater swamp forests were considered a particularly important habitat, particularly in Sumatra where these swamp forests support significantly higher orangutan densities than lowland dipterocarp forests. It was also noted that the presence of large trees may be especially important in dryland forests as hosts for strangling figs.

A further point that must be borne in mind is that orangutan densities can still vary markedly between apparently similar habitat types, as a result of variation in the density and distribution of key tree species (e.g. food trees).

What else is important for orangutan conservation?

Mention was made of the recent taxonomic re-classification of orangutans. Now, Sumatran orangutans are considered a separate species and Bornean Orangutans are separated into three subspecies. A brief discussion explored whether or not special emphasis should be paid to try and maintain examples of each distinct subspecies in Borneo. There was a general agreement that this would be desirable, but that given the very rapid rate of decline throughout their range, there were no additional conclusions or recommendations regarding this. Instead, it was considered sensible to attempt to conserve all viable populations, regardless of subspecies or species status.

What Causes Population Decline?

The group identified the following causes of orangutan population decline.

- I. Habitat Loss and Degradation
 - A. Mining
 - B. Logging
 1. Timber
 - a. Concessions

- b. Illegal
 - 2. Encroachment
 - a. Settlement
 - b. Agriculture
- C. Fire
- D. Encroachment
- E. Drainage

- II. Land Use Policy
 - A. Conversion to agriculture
 - B. Conversion to plantations
 - C. Negative effects of transmigration for Indonesia

- III. Hunting
 - A. Meat
 - 1. Cultural practices
 - 2. Opportunistic
 - B. Trade
 - 1. Pets
 - 2. Body parts
 - 3. Research animals
 - C. Pests

- IV. Natural Causes
 - A. Disease
 - B. Catastrophe

- V. Demographic
 - A. Viability of small fragmented populations

Orangutan population decline is primarily caused by habitat loss and fragmentation, inappropriate land use policy, hunting, natural causes (such as disease and catastrophes) and demographic factors. Habitat loss and fragmentation was considered to be the primary cause of orangutan population decline. The main factors behind habitat loss are legal and illegal logging, fire, mining, encroachment and drainage. It was stated that illegal logging accounts for ca. 60% of all logging in the province of Kalimantan Tengah.

Changes in land use policy can lead to habitat destruction and fragmentation, especially if environmental factors and wildlife are not considered in the environmental impact analysis. An additional example of land use policy issues was cited from Sumatra, where some areas were lost from the Department of Forest Protection and Nature Conservation's control as a result of a merger and subsequent split between the Ministry of Forestry and the Ministry responsible for plantations.

Although it is illegal to capture, trade or keep an orangutan, orangutan populations are still threatened by hunting for meat, trade, spiritual practices and as a result of crop raiding.

The degree to which natural causes such as disease and catastrophes may be a factor in the orangutan population decline is unknown. However, we do know that large-scale fires are now a recurrent threat in Kalimantan, occurring every 3 to 5 years. (This could eventually occur in Sumatra as well as data show that fires are moving north with concomitant land degradation.) The 1997/1998 fires led to a large

decline in orangutan habitat and, according to Rijksen and Meijaard, a dramatic decrease in the Bornean orangutan population. (C. Yeager., pers. comm.)

Finally, demographic changes caused by fragmentation of populations and hunting may affect orangutan population viability.

Note: There was some discussion as to what level to put land use policy. Some of the group members considered that this was a causal factor rather than an actual 'process' of habitat loss. Others however, considered it to be a very major issue. For this reason it was subsequently maintained as a high level factor.

Threats to existing protected areas

Using the above list of threats an attempt was made to list the degree to which each of them affects each of the major orangutan populations still extant. The results of this are presented in table 1.

The table identifies the national parks and some other protected and un-protected forests that still contain significant orangutan populations. It then proceeds to identify the importance of each of the main factors responsible for the decline of orangutan populations (see above), in each of these areas. This was achieved by scaling the level of threat on a scale of 1 to 5, where 5 represents the greatest threat and 0 denotes a complete absence of the factor in the area.

Some orangutan habitat areas were added to the above list, in addition to the main National Parks. These include:

- 1) Sebangau (KalTeng)
- 2) Ronga Perai complex (KalBar) No data available
- 3) Gunung Niut, Nature Reserve (KalBar),
Data of '94 by Meijaard indicated orang-utan smuggling in that area, current situation unknown.
- 4) Kendawangan (KalBar), Nature reserve,
Biggest problem is illegal logging, which left patched forest with lots of savanna like areas, 1 orang-utan has been seen recently.
- 5) North of Sebangau, Kahayan Kapuas swamps (Kalteng),
Has orang-utans, but no protected status. It is a concession logging area. Fires were a big problem in 1997.
- 6) Sangkuliran, proposed protected area. Last remaining larger area in KalTim. Consists of limestone areas and lowland dipterocarp forest, about 200,000 ha.
- 7) Sebaku Sembakung, proposed protected area (Kaltim)
- 8) Unprotected areas in Sabah.
- 9) Batang Ai (Sarawak), no data available within the group.
- 10) Tapanuli Tengah, Sumatera Utara; supposed to contain orangutans, no additional data.

- 11) Batang Toru, Sumatera Utara; supposed to contain orangutans, no additional data available.
- 12) Northern Aceh population, orangutans still surviving in forested areas outside, and mainly North of the Leuser Ecosystem.

Case studies

As part of the process of exploring the various issues, and to identify the root causes and possible solutions, a few investigations were conducted to look at case studies. These are presented below.

A. Gunung Palung National Park, Wesr Kalimantan:

1. Illegal Logging

Why ?

- Because there still is a national and international (Malaysia, Singapore, via Pontianak) market.

Who controls these markets?

- Local government, Malaysian business.

How can this be possible?

- No law enforcement, at local and national level, big problem corruption. Note that it is easier for Malaysians to log in Indonesia than vice versa. One member thinks that we need pressure from national/ international level.

How can we take fast action?

- Illegal logging is a BIG ISSUE, 60 % in KalTeng illegal.
- The problem lies according to one group member, not in the institutional structure, but with not finalising the legal process. Just confiscation with no follow up, has no effect. People are not being arrested or fined.
- Another issue might be that the loggers have no other ways to get income.
- For the long term we should concentrate on public awareness, awareness of the LAWS. We should also try to involve more local people; hire them!
- To deal with the demand side perhaps we should certify wood. The problem will be that it can't be checked, and the wood may have been illegally logged. We could though use the international pressure make the people in the west aware of this and encourage not to buy Indonesian wood.
- We should consider increased patrols. It was mentioned that OFI pays the police for surveys and monitoring of about 20 % of the park and that they have been effective in stopping logging in this area. The patrol teams consist of police and local people. But rather than stop, the loggers simply move to another area. Maybe the teams should be bigger to be able to cover a bigger area. Dangerous conflict situations have arisen repeatedly in Tanjung Puting and people are concerned that patrol teams will lead to dangerous conflict situations. However, an example was given that it can work. In Sabah they were also confronted with this problem. They trained 100 local people in cooperation with the Wildlife Department and say that is it very effective.
- Fences were suggested as an option, but not considered necessary in those national parks that have clear boundaries marked with cement poles.

2. Hunting

Why ?

- For sale as pets (as a status symbol). Data from 1995-1996 show that the main trade route is to Pontianak, Singapore, Semarang and Java. Data from 2001 also include Kumai to Surabaya and Semarang.
- A survey done in 2000 (Chanee, unpublished) showed that every week 2 orang-utans from Kalimantan are smuggled out of Jakarta via Batam to Singapore.

Where are the problems?

- Local law enforcement

Solution?

- We should focus on Batam and Singapore, followed up by campaigns internationally.

3. Fire

Why?

- Land clearing (in plantations or of agricultural fields)
- Hunting related. To encourage young shoots that are then eaten by deer etc..
- Drought, accidental, natural (1997, 1998).
- Encroachment related fires

Solutions?

- To plant a zone with fire resistant trees combined with monitoring.
- Fire breaks, would need training of personnel. We should investigate first. There will be conflicts on the socio-economic level (e.g. settlement encroachment). In many areas this will not work since fire can travel underground for long distances in coal seams or peat swamp.
- Land use policy changes
- Financial incentives for use of non-fire land-clearing techniques

B. Leuser Ecosystem, Sumatra:

Orangutan populations in Sumatra face the same threats as other populations in Kalimantan. Recent surveys indicate that there are probably no extant orangutan populations (at very least not viable ones) south of the Batang Toru river in Sumatera Utara. Despite a few outlying populations in this area, the majority of Sumatran orangutans still, therefore, occur in and around the Leuser area.

The Gunung Leuser National Park spans the border of Aceh and North Sumatra. It is a large forested area comprising primarily mountains. An NGO, via the Leuser Development Programme, has obtained the land rights to manage this area for conservation and to expand the area under management into surrounding areas. The entire region under the management of this programme is now called the Leuser Ecosystem. The majority of remaining orangutans are to be found outside the original Gunung Leuser National Park boundaries, but within the much larger Leuser Ecosystem. They do not therefore, occur within forests that are currently subject to national park law. In fact, possibly the largest single contiguous Sumatran orangutan population occurs in what was until very recently an area designated as a logging concession (i.e. the Singkil swamps). NB: These swamps have recently been re-classified as Suaka Margasatwa (wildlife reserve), but the concessions are still allowed to run their course until they expire.

Issues

- Land use allocation is a big issue and it is thought that the areas with orangutan populations should be re-designated, to protect them as orangutan habitats, with tighter laws.
- Orangutan habitat within the Ecosystem and along the edges of the original National Park is becoming increasingly fragmented as logging activities extend higher up the many river valleys.
- There might even exist an opportunity to swap an area in the Park for an area outside of the park.
- It was noted that existing concessions in the Singkil swamp area will expire in 5-10 years. The 19 or 20 concessions in the area are governed by the Enforced Indonesia Selective Logging system (Tebang Pilih Indonesia; TPI) in Limited Protection forests (Hutan Produksi Terbatas; HPT). Once concessions are finished the area should be reclassified as Hutan Lindung (Protected forests). These include some specific regulations such as that within HPT it is not permitted to fell fig trees. The restrictions dictated for HPT should be enforced.

Singkil Swamp In Sumatra, by far the highest orangutan densities are to be found in the few remaining freshwater swamp forests. Probably the single largest contiguous Sumatran orangutan population lies in an area to the southwest of the ecosystem (and recently incorporated within it), known as the Singkil Swamp. This area is still occupied by concessions (see above), and virtually cut off from the rest of the Leuser orangutan population by a bottleneck that contains kebuns and human settlements. A wildlife corridor has been agreed with the authorities and is in the process of development. Despite some apparent evidence to suggest that wildlife is utilising this corridor further, more detailed research was proposed as a means to monitor its effectiveness.

The most significant problem facing the Singkil Swamp is LEGAL logging. Transmigration is not a problem at present as most sites have been abandoned due to the civil unrest in Aceh and periodic flooding in the area near to Soraya.

Kuala-tripa Swamp This forest was cleared by legal logging and subsequent drainage, and now contains only a narrow strip of forest near the coast. A cost evaluation to present to the government would be valuable to show the economic losses of such projects—Inappropriate government policy

C. Central Kalimantan:

Extensive peat swamp forests in the area have been (and continue to be) heavily logged and drained via extensive drainage canals. Peat swamp forests must have water for most of the year but once drained, the dry period is extended and this no longer happens. The trees in these areas have shallow roots and if the peat is dry, the trees die and fall. Also deep peat swamp areas cannot sustain agriculture or palm plantations.

All deep peat forests are supposed to be protected as Kawasan Lindung (protected areas) according to Indonesian law because of their value as water catchment areas. Thus they have much higher economic value than the value of the lumber itself. There is also a national regulation that protects a buffer zone along all river banks (i.e. Kawasan Lindung Setempat or 'local' protection forests). This is a major issue and results from land use policies that disregard established laws.

Conclusions from the Kalimantan peatswamp case study:

There is inappropriate land use because local governments do not have sufficient knowledge of conservation problems, and lack the infrastructure to regulate these issues as a result of the ongoing governmental reforms.

Recommendations:

- Go back to the basic law by recognising the social impacts occurred by improper land use by removing loggers, enabling peat regeneration by filling in canals, and examine future land use policy.
- Create awareness policies at all levels about the importance of these ecosystems. Bureaucrats must be especially targeted.

Additional topics raised:

Legal responsibilities within protected areas

Discussion was held to identify who is legally responsible for policing offences within National Parks. Many problems with this situation were discussed. At present the legal process of arrest, charging and prosecuting comes under the responsibility of different groups and is a somewhat convoluted process. The responsibility for confiscation, arrest and prosecution is divided between park rangers, Jagawana/Polisi Hutan (Forest Guards) and the regular police. Jagawana must pass a test to get a license to prosecute.

One of the key issues highlighted with the current procedures concerned evidence. For example, if PHKA officials witness and arrest an offender and then bring them to the regular police, a 'lack of evidence' is often stated as a reason to not proceed with the legal procedure. The penalty for illegal logging was stated to be five years in prison and/or fines of \$10,000 USD

It was pointed out that a decree already exists that allows special forest police to act as 'assistants to magistrates'. The group recommended that the government should ensure that the relevant authorities concerned with this matter make this decree effective.

In some areas it was stated that police are effective if given financial and other support, whilst others argued that PHKA staff were adequate. Tanjung Puting was cited as an example of effective policing by the regular police. OFI pays the police for surveys and monitoring of about 20 % of the park and have been very effective in stopping logging in this area. The patrol teams consist of police and local people. There was much debate about this and some contended that they were only effective as they patrolled a relatively small area of the Park. It was suggested that if they attempted to patrol the entire border, a dangerous conflict situations would almost certainly result (Dangerous conflict situations have arisen repeatedly in Tanjung Puting.). It should also be noted that the amount of commercial timber available near Camp Leakey is lower than other parts of the park because the area was logged prior to being made into a research site.

Perhaps there is some way to streamline the process for policing National parks or to eliminate some of these existing difficulties. It was recommended that one group, or authority, should be able/empowered to carry out the complete process of arrest and prosecution (e.g. Polisi Hutan) so that they do not need to go through the local police and prosecutors (who can easily claim that there isn't enough evidence). This would reduce opportunities for corruption.

Another option that was mentioned was recruiting local people. An example from Sabah suggested it can work. When confronted with this problem they trained a 100 local community people, in cooperation with the Wildlife Department, and concluded that it is very effective. It should be taken into account that community participation can be effective when a) you have a stable resident community (not the case in Tanjung Puting and many other areas due to the influx of either economic migrants or internally displaced persons fleeing conflict regions); and b) there is some respect for the "rule of law" (also not happening in much of Indonesia).

The overall result of this discussion was that we should recommend that the relevant authorities make the above-mentioned decree effective in order to contain logging. The decree should enable a ‘fast-track policy’ for law enforcement in protected areas (arrest—charge—prosecute). At very least, the legal processes concerning protected areas to be flawed and should be investigated.

There must be more clarity in legal responsibilities associated with National Parks for groups involved in law enforcement, confiscation of illegally obtained timber or animals, and subsequent arrest of criminals.

Recommendation:

- Park Rangers can be trained as Polisi Hutan that have the authority to arrest persons participating in illegal activities in National Parks.
- Empower local enforcement officials
- Examine responsibilities of involved law enforcement groups such as National versus local responsibilities

Eco-labeling

The topic of eco-labeling was discussed as a possible option to improve the practices of legal logging concessions. However, current eco-labeling practices in Indonesia have not been successful. This is because they have driven up the price of wood products to the point where such products are no longer marketable. Additionally, statistics indicate that as much as 50% of wood and logs from Indonesian forests actually remain in Indonesian forests, and are not, therefore, exported. If this is true, eco-labeling practices would not be practical to implement in Indonesia. Statistics also indicate that most Indonesian wood goes to Japan, China, and other nations in East Asia, while only 2% reaches Western markets. Thus, the topic of eco-labeling should be addressed in such nations as a solution, rather than in Western nations. For further information regarding the practicality of implementing such an eco-labeling policy, the eco-labeling Institute in Bogor, Indonesia ought to be contacted. Concern was also noted regarding the level of corruption within Indonesia and the ease of forging just about anything. This could mean that certification would be effectively meaningless.

Tree Spiking

The issue of tree spiking was raised as a possible means of deterring illegal loggers. An example of tree spiking was cited as the USA, where activists protesting predominantly (if not exclusively) legal tree felling have used the method. Tree spiking normally involves the insertion into the trunk of the tree of a long metal rod or large nail (presumably with a hammer and drill). There are other ways of doing this, however, and one was cited that uses a ‘bomb’ device that inserts numerous metal pellets in to the tree trunk. An additional method proposed was using ceramic spikes, as these cannot be detected by metal detectors.

There are two main goals of this kind of tree spiking. The first is to prevent the logger directly using a chainsaw to fell the tree. The second is to destroy the saw mill blade when the timber is being cut and processed. The bomb method mentioned above is geared towards damaging blades but not hurting people. It may still be dangerous to people working in the sawmill, however, if the blade is seriously damaged.

In the USA the practice of tree spiking is illegal. It is not certain, however, if this is simply because it interferes with a legal process (i.e. legal logging) or because it can be dangerous. However, it was noted that felling trees in national parks is also illegal and furthermore, so are many sawmills in Indonesia. Even legal sawmills continue to process large quantities of illegal lumber.

As a result of the potential for injury to people it was concluded that any programme of tree spiking in Indonesia can only be effective if it is instigated by the Indonesian government, as (or part of) a national

program. It should be an open operation, promoted through national television and the press, so that the public is fully aware of the consequences of illegal logging. Illegal logging is an immense problem. Perhaps this approach offers some hope to reduce or stop it. Other methods do not appear to be working.

The group strongly recommended that this option was extremely worthy of further investigation. It was also recommended that alternatives be investigated in the hope that some method might be discovered that would reduce or remove these risks (e.g. the pellet bombs mentioned above). Existing 'pellet bombs' were considered potentially risky to wildlife as they were believed to contain lead. It was considered, however, that if they could be made using lead they ought to be easily manufactured using non-lead alternatives. Every effort should be made to find out if there are indeed any 'safe' alternatives (see the Gibbon Foundation Challenge, Appendix II) to tree spiking but if there are not, tree spiking ought to still be considered as an option.

Note: The recommendation to consider tree spiking as a potential deterrent to illegal logging was put forth by this working group but was not accepted by the workshop as a whole. After an intense plenary discussion on the pros and cons of this controversial technique, the working group reconvened to continue their deliberations and consider the comments made. In the end, the group determined that the recommendation should remain. Workshop participants were invited to prepare dissenting opinion pieces if they found this (or any other) recommendation unacceptable. See Appendix I for a report rebutting the use of tree spiking.

The issue of re-sale of confiscated timber

On occasions the loggers protest against the confiscation and they are given back or they can buy back the wood or chainsaws. In Indonesia it is LEGAL to sell confiscated wood. Some people make considerable amounts of money with this. Procedures to prevent the resale of confiscated timber have in the past included 'spiking' the logs with metal rods (similar to spiking living trees; see above).

Summary of issues so far discussed

I. HABITAT LOSS

A. Illegal Logging:

1. Market/demand
2. Trade Routes
3. Businessmen make the money, not the local communities
4. Inadequate law enforcement
5. Individual corruption at every level

How to Prevent?

1. Need international pressure
2. Need National policies
3. Streamline the current legal process
4. Find alternative incomes for local communities

Recommendations

1. Tree spiking or lead pellets (less dangerous) and only if national government policy (see dissenting opinion, Appendix I)
2. Export bans
3. Moratoriums
4. International pressure on government
5. Reduce international demand
6. Eco-labeling
7. Pay for patrols
8. Confiscation
9. Arrest loggers and prosecute
10. Bring logging bosses and backers to justice
11. Education/awareness
12. Poverty alleviation (outside scope)

B. Fire

1. Arson
 - a. Hunting related
 - b. Burning forests for agriculture
 - c. Burning forests for encroachment
2. Drought
 - a. Out of control burning
 - b. Natural catastrophe
 - c. Can lead to further burning and encroachment

Recommendations

1. Fire buffer zone
2. Fire resistant trees
3. Fire fighting teams
4. Creation of fire break?

C. Encroachment

1. Plantations
2. Agriculture

Recommendations

1. Fencing (discussed but considered unworkable)

II. HUNTING

A. Trade

1. Local demand (status symbol)
2. International demand
3. Lack of law enforcement

Recommendations

1. Trade route research (especially Batam)
2. Campaign in areas where orangutans going
3. Improved law enforcement (how?)
4. Patrols

III. LAND USE POLICY

1. Conversion to oil palm plantations
2. No E.I.A.
3. Little assistance to provincial government
4. No overall strategy

Recommendations

1. Assistance to local government in land use and environmental planning
2. Need proper procedures
3. Need strategy and planning procedure at Kabupaten level
4. Local governments establish a local decree for land use planning and development planning

Issue 1: Illegal logging

Root Cause: A demand for timber in an environment of inadequate law enforcement with individual corruption at every level leads to illegal logging.

Scenario 1: Identify a method for mechanical protection and devaluation of trees that does not harm people

Goal: Develop and implement method aimed at removing or reducing the value of timber at source, with the intention of discouraging tree removal from National Parks and Conservation areas. This scenario can be achieved with government agreement, outside funding and cooperation between conservation groups and PHKA. It would also require a National media campaign.

Obstacles: Objections from illegal logging interests.

Action Step 1. Investigate new and existing techniques

Measurable outcome: Discovery of which method works best and does not harm people.

Resources Needed: None

Person Responsible: Erik Meijaard

Time Line: By July 15, 2001

Action Step 2. Find political support in Indonesia and creation of presidential decree

Measurable outcome: A presidential decree

Resources needed: Propose method to Minister of Forestry who will discuss with President of Indonesia.

Person Responsible: Pak Widodo, PHKA

Time line: Initiated by June 30, 2001; Decree stage initiated by July 31, 2001

Action Step 3. Find resources to support program from international community

Measurable outcome: Funds are made available to support program and carry it out

Resources Needed: Materials, training, people to carry-out program

Person Responsible: Erik Meijaard

Time line: Proposals submitted within one month of decree

Action Step 4. Media campaign and socialization

Measurable outcome: Awareness of the program by international, national and local people.
Achievement of a benchmark level of awareness in rural areas of Borneo and Sumatra.

Resources Needed: Funds for program

Person Responsible: Indonesian government once instituted

Time line: Within 2 months of achieving Step 3

Scenario 2: Enforcement of Presidential Decree #5/90A decree and Forest Regulation #41/99.

This decree allows special forest police to act as assistants to magistrates. However, due to certain circumstances, they cannot perform the duty effectively to prosecute illegal loggers. These circumstances, principally involve lack of cooperation between the relevant authorities, primarily the Bupati and the police. Overcoming this lack of cooperation is one of the main obstacle.

Action Item 1: Find out where it's been effective and why.

Measurable outcome: Knowledge is obtained and distributed to people who will lobby local government (action item 2).

Resources Needed: None

Person Responsible: Michael Sowards

Time Line: By July 15, 2001

Action Item 2: Lobby local government

Measurable Outcome: Local government support is obtained and a decree is carried out

Resources Needed: None

Person Responsible: Park Heads, government officials, NGO's, researchers

Time Line:

Scenario 3: Recommend that ongoing Dana Alokasi Umum (Special Allocation Funds) for the Bupatis be linked to conservation issues.

Bupatis currently receive special allocation funds from the Central Government based on their performance. It is recommended that the allocation of this money be tied to the Bupati's performance on conservation issues.

Measurable Outcome: Director General of Forestry advises Minister of Forestry that these funds be tied to conservation.

Resources Needed: Time

Person Responsible: Pak Widodo and Director General for Forest Conservation

Time Line: July 31, 2001

Scenario 4. Establishment of Orangutan patrol units modeled after Rhino patrol units

The Rhino Patrol Units grew out of a CBSG PHVA analysis of the rhino. Support was obtained from the American Zoological Association, the International Rhino Foundation and WWF to support the program. We recommend that similar patrols be set up in Indonesia. These patrols would be made up of forest police, NGO's, local people and police and could include members of existing rhino patrols.

Action Item 1: Documentation obtained about Rhino program

Measurable Outcome: Local groups are made aware of program

Resources Needed:

Person Responsible: Distributed by Pak Widodo

Time Line: July 2001

Action Item 2: Design a protocol for “orangutan patrol units” focused on environment/habitat protection and assessment.

Measurable Outcome: Will have a document that can be distributed to national parks.

Resources Needed: Time

Person Responsible: Jaquie

Time Line: By June 30, 2001

Action Item 3: Obtain support of local people

Measurable Outcome: Local people will support program

Resources Needed: Time and effort of people at local level

Person Responsible: Park heads, NGO's, researchers

Time Line: Beginning August 2001

Action Item 4: Obtain Funding for program

Measurable Outcome: Funding will be obtained

Resources Needed: Costs of the program should be determined under Action Item 1.

Person Responsible: All interested national and local parties

Time Line: Should seek funding immediately

Action Item 5: Implement Program

Training will be needed on how to do surveys (possibly using GPS), survival activities in the forest, how to perform confiscation, etc. Local people will be encouraged to participate in this activity. Key to have support of the local people.

Measurable Outcome: The program will be initiated throughout orangutan habitat.

Resources Needed: Personnel, trainers, equipment, patrol bases, appointment of Head of Unit

Person Responsible:

Time Line:

Scenario 5: Recommend a new government policy illegally collected timber should be considered illegal and should not be allowed to be utilized in order to prevent the laundering of illegal timber.

Action Item 1: Suggest recommendation

Measurable Outcome: Presidential or Legislative Decree

Resources Needed:

Person Responsible: Pak Widodo will suggest to Director General of Forest Protection who can make suggestion to Minister of Forestry and then to National Government.

Time Line: July 31, 2001 for initial proposal

Action Item 2: Obtain international support for action by such means as International pressure, IMF conditions, IDCF (interdepartmental coordinating ministry of forestry), CGI (consultative group on Indonesia), ITTO (International timber trade organization).

Measurable Outcome: Support will be obtained

Resources Needed:

Person Responsible: Anyone that has access to these organizations

Time Line: On-going

Scenario 6: Present the case for orangutan conservation to local and national parliaments.

Measurable Outcome: Presentations to all local governments that have orangutans in their area and to the National Parliament (DPR).

Resources Needed: Information packets. Examination of what will be the convincing arguments on a local level. Identification of who will make the presentations in each locality.

Person Responsible: Miriam van Gool, Isabelle Lackman Ancrenaz

Time Line: August 31, 2001

Scenario 7: Assess how many people are killed and injured by legal and illegal logging so that information can be used to influence public opinion

Action Item 1: Suggest research project be carried out.

Measurable Outcome: A report will be produced

Resource Needed: Funding for project and time

Person Responsible:

Time Line:

ISSUE 2: LAND USE PLANNING

Several problems have arisen in maintaining orangutan habitat as a result of inadequate consideration of the inter-relationship between ecosystems in certain areas. For example, the experience that occurred during the mega-rice project resulted in substantial changes in the entire peat forest ecosystem that resulted in substantial dying out of peat forests due to drought. This problem ultimately results in the degradation of the remaining orangutan forest habitat. Another example occurred in Kuala Tripa, a peat swamp forest in Western Aceh that was converted into oil-palm plantations. It resulted in the dying out of the remaining forest in the entire river delta that was valuable to the local people and an important orangutan habitat.

Scenario 1: Land-use policy should consider environmental interdependency of the forest habitat within the same landscape. Thus, a comprehensive EIA (Environmental Impact Assessment) that considers all natural living resources shall be prepared prior to any landscape alteration.

Action Item 1: Obtain a government decree from the President through the Minister of Interior. Minister of forestry of can put forth to Minister of Interior.

Measurable Outcome: National Government decree is obtained

Resources Needed:

Person Responsible: Pak Widodo presents concept to Minister of Forestry who presents to President

Time Line: Before August 31, 2001

Action Item 2: Obtain support from International community

Measurable Outcome: International pressure on Indonesian government

Resources Needed:

Person Responsible:

Time Line:

Scenario 2: Insist that peat swamp forest should not be utilized. Other uses such as carbon sequestration can be put forth.

Have to consider two sides: 1) how to acquire funds from carbon sequestration, and 2) have to have assurance that peat forest will not be changed into other land use.

Measurable Outcome: National Government decree is obtained

Resources Needed:

Person Responsible: Pak Widodo

Time Line:

Scenario 3: Lobby local governments to make similar decrees.

Action Item 1: Investigation of laws at local level

Measurable outcome: Local governments are lobbied

Resources Needed:

Person Responsible: Darmawan will provide advice

Time Line:

Scenario 4: Remind local environmental offices to perform EIA .

Measurable Outcome:

Resources Needed:

Person Responsible:

Time Line:

Scenario 5: Develop more explicit instructions for performing EIA

Action Item 1: Develop recommendations

Measurable Outcome: Send report to the Minister of the Environment.

Resources Needed:

Person Responsible: Darmawan

Time Line: August 15, 2001

Scenario 6: Need to identify habitats and corridors outside of current protected areas that should be candidates as conservation areas and request to the government that they be designated as conservation areas.

Action Item 1: Identification of those areas and presentation to the Minister of Forestry

Measurable Outcome:

Resources Needed:

Person responsible: Miriam van Gool

Time Line: November 1, 2001

Scenario 7: During the course of decentralization assistance shall be provided to the local government in the form of pendampingan and empowerment such as the development of district regulation on land-use and development planning procedures.

Measurable Outcome: Local Government Decree or Policy

Resources Needed:

Person Responsible: Pak Widodo

Time Line:

Scenario 8: Realizing the importance of natural forests as a live support system, the local governments in districts that harbour orangutans should have a specific land use and development planning program that considers the conservation area.

Measurable Outcome: Change in practice by local governments

Resources Needed:

Person Responsible:

Time Line:

Scenario 9: Customary law should be recognized in order to reduce potential conflict in land tenureship.

Action Item: Remind conservation managers, local governments, National and International NGO's to look at this matter.

Measurable Outcome:

Resources Needed:

Person Responsible:

Time Line:

Scenario 10: Apply law of Agraria for justifying land tenureship at the local level.

Measurable Outcome:

Resources Needed:

Person Responsible:

Time Line:

ISSUE 3: Hunting

Scenario 1: Formation of anti-poaching groups that include local government people and NGO's.

Can be combined with Scenario 4 of Issue 1.

Measurable Outcome:

Resources Needed:

Person Responsible:

Time Line:

ISSUE 4: FIRE

Root Cause: Natural fires and/or human caused fires (forest clearing for agriculture)

Effects are worse during very dry years as was the case during El Nino (1997).

Scenario 1: Fire prevention – create buffer zones of fires resistant trees to protect National Parks

[Note: In Baluran savanna, the so called fire resistant exotic (Indian) trees introduced in the early 1970s quickly developed into a pest, aggressively supplanting the original woody vegetation, and ruining a unique savanna ecosystem . It proved absolutely impossible to get rid of the pest. Fire prevention in rainforest is a ban on (anything but the most careful and controlled selective) logging and strict protection against trespassing and encroachment. There should be no consumptive utilisation whatsoever in protected areas – according to the legal framework. H. Rijkssen]

Obstacles:

- Park Management permission
- Tree growth takes time
- Seedling availability
- Monitoring and maintenance of trees
- Determination of appropriate width of buffer zone

Action Step 1: Negotiate permission

Measurable outcome: Park permission

Resources needed: none

Person Responsible: Up to local organizations to initiate

Timeline: August, 2001

Action Step 2: Investigate fire resistant tree types

Measurable outcome: Identification of appropriate fire-resistant tree types

Resources needed: none (literature search)

Person Responsible: Darmawan

Timeline: August, 2001

Action Step 3: Train staff in monitoring and habitat restoration (the best habitat restoration in Indonesian rainforest is effective protection)

Measurable outcome: Trained local staff

Resources needed: Money, Expert Trainer, Park staff and local people

Person Responsible: up to individual organizations in parks to initiate this effort

Timeline:

Action Step 4: Establish nursery and plant trees

Measurable outcome: Buffer zone of fire-resistant trees

Resources needed: Money, seedlings, and water

Person Responsible:

Timeline:

Note: Darmawan worked with WWF to initiate a similar program in Kutai, but the project has ended

Scenario 2: Fire Management – trained fire monitors and fire fighters for in situ response to fires

Obstacles: Fund raising, training local staff

Action Step 1: Obtain funding

Measurable outcome: Money

Resources needed: Money

Person Responsible:

Timeline:

Action Step 2: Hire and train fire monitors/fighters

Measurable outcome: Fire-fighting team

Resources needed: Money, expertise, staff

Person Responsible:

Timeline:

Note: There is a forest fire-fighting team in each Province (Satkanlak Kebakaran Hutan, DINAS) which can be used as a resource, and possibly to provide training. Logging patrols could be trained to fight fires when they occur.

Working group members: Abdul Muin, Abu Hanifah Lubis, Akira Suzuki, Andang Widiyanto, Benvika, Bob Ashton, Cheryl Knott, Darmawan Liswanto, David Muhammad, Djuwantoko, Erik Meijaard, Helga Peters, Ian Singleton, Isabelle Lackman Ancrenaz, Isabelle Lardeux-Gilloux, Kurung, Michael Sowards, Miriam van Gool, Rondang S. E. Siregar, Simon Husson, Cheryl Knott, Tamaini Snaith, Chanee, Widodo S. Ramono, Zaqie

Area	Orangutans Released?	Area Size	Habitat Types	Active Orangutan Research Site	Habitat Loss and Degradation					Small/ Isolated Population	Area	Land Use Policy			Hunting				Natural Causes	
					Mining	Logging	Fire	Encroachment	Drainage			Conversion to agriculture	Conversion to Plantation	Transmigration	Meat	Trade	Pests	Spiritual	Disease	Catastrophe
West Kalimantan											West Kalimantan									
Gunung Palung N.P.	No	90,000 ha	Peat, freshwater swamp, Alluvial, Lowland Dipterocarp, Hill Dipterocarp, Montane, secondary	Yes	0	5	4	3.5	0		Gunung Palung N.P.	4	2.5	1	0	3	1	0	0	0
Bukit Baka/Bukit Raya	No	181030 ha		No (gibbon program)	1	4	0	3	0		Bukit Baka/Bukit Raya	0	0	0	?	?	?	?	?	2
Betung Kerihun	No	800,000 ha	Lowland Dipterocarp, Hill Dipterocarp, Alluvial, montane	No	2	5 (in buffer)	0	2	0		Betung Kerihun	?	3 (in buffer)	0	3	3	3	3	?	?
Danau Sentarum	No	1300		No	1	4	4	4	2		Danau Sentarum	3	4	1	3	3	2			
Ronga Perai Complex	No	<1,000,000	Lowland Dipterocarp, Hill Dipterocarp,	No	?	3	?	?	0		Ronga Perai Complex	1	?	?	?	?	?	?	?	?
Gunung Niut N.R.	No	110,000 ha									Gunung Niut N.R.									
Kendawangan N.R.	No	150,000	Lowland Dipterocarp?	No		5	5	2			Kendawangan N.R.	2	0	0	0	0.5	0.5	0	0	0
Central Kalimantan											Central Kalimantan									
Tanjung Puting	Yes	415,040	Lowland peat swamp, Lowland Dipterocarp, Heath Forest	Yes	5	5	4	5	5	4	Tanjung Puting	3	5	0	1	1	3	0	?	?
Lamandau Wildlife Sanctuary	No	76,000	Lowland Peat swamp, Heath Swamp	No (vegetation)	2	5	4	5	5	4	Lamandau Wildlife Sanctuary	3	5	0	1	1	0	0	?	?
Sebangau Limited Protection Forest	No	700,000 ha	Peat Swamp	Yes	0	5	2	1	5	0	Sebangau Limited Protection Forest	0	0	0	4	?	0	?		
Kahayan Kapuas Swamps	No		Peat Swamp	No	?	5	2	2	5	2	Kahayan Kapuas Swamps	0	0	0	3	?	0	?		
Katingan Swamps	No	200-300,000 ha	Peat swamp	No	0	5	1	3	5	0	Katingan Swamps	?	?	?	2	?	?	?		

Area	Orangutans Released?	Area Size	Habitat Types	Active Orangutan Research Site	Habitat Loss and Degradation					Small/ Isolated Population	Area	Land Use Policy			Hunting				Natural Causes		
					Mining	Logging	Fire	Encroachment	Drainage			Conversion to agriculture	Conversion to Plantation	Transmigration	Meat	Trade	Pests	Spiritual	Disease	Catastrophe	
Schwaner Range foothills	No	?	Lowland peat swamp, Lowland Dipterocarp, Heath Forest	No	?	5	?	?	0		Schwaner Range Footfills	2	threat of oilpalm establishment	?	3	?	?	?	?	?	?
East Kalimantan											East Kalimantan										
Kutai	Yes	200,000	Lowland dipterocarp	Yes	5	5	5	3	0		Kutai	5	5	3	1	1	0	0	0	0	5 (fire)
Sungkulirang Protected Area	No			No	5	5	5	3	0		Sungkulian Protected Area										
Samarinda-Boutay	No	?	Secondary (ex concession)	No	0	5	0	3	0	3		4	0	4	4	0	1	0			
Sebuku Sembakung	No	448,589 ha	Lowland Dipterocarp, Submontane, mangrove	No	?	4	?	?	?		Sebuku Sembakung	?	3	2.5	?	?	?	?			
Meratus	Yes			No																	
Sungai Wain	Yes			Yes (released)																	
Sumatra											Sumatra										
Gunung Leuser N.P.	Yes	900000 ha	Peat, freshwater swamp, Alluvial, Lowland Dipterocarp, Hill Dipterocarp, Montane, secondary	Yes (now limited follows only)							Gunung Leuser										
Leuser Ecosystem	Yes	2,450,000 ha	Peat, freshwater swamp, Alluvial, Lowland Dipterocarp, Hill Dipterocarp, Montane, secondary	Yes-3 (now limited follows)	1	5	1	3	0	?	Leuser Ecosystem	2	5	2	0	1	1	0	?	?	
Northern Aceh	No	1564 km ²	?	No	?	5?	?	?	?		Northern Aceh	?	?	?	?	?	?	?	?	?	?
Batang Toro	No	?	?	No	?	5?	?	?	?		Batang Toro	?	?	?	?	?	?	?	?	?	?
Tapanuli Tengah	No	?	?	No	?	5?	?	?	?		Tapanuli Tengah	?	?	?	?	?	?	?	?	?	?

Area	Orangutans Released?	Area Size	Habitat Types	Active Orangutan Research Site	Habitat Loss and Degradation					Small/ Isolated Population	Area	Land Use Policy			Hunting				Natural Causes	
					Mining	Logging	Fire	Encroachment	Drainage			Conversion to agriculture	Conversion to Plantation	Transmigration	Meat	Trade	Pests	Spiritual	Disease	Catastrophe
Sarawak																				
Lanjak Entimau W.S.	?	187,000	Secondary Logged forest, Lowland dipterocarp forest	No	0	1	0	1	0		Lanjak Entimau	0	0	0	1	0	0	0	0	0
Batang Ai N.P.	?	25,000	Hill dipterocarp	No	0	1	0	1	0		Batang Ai N.P.	0	0	0	1	0	0	0	0	0
Maludan N.P.	?		Peat, Secondary	no	0	1	0	2	0		Maludan N.P.	0	0	0	1	0	0	0	0	0
Sebuyau F.R.	?			no	0	4	0	3	0		Sebuyau F.R.	1	1	0	1	0	0	0	0	0
Semenggoh N.R.	Yes	653 ha	Lowland Dipterocarp, secondary forest	Yes (Released)	0	0	0	0	0		Semenggoh N.R.	0	0	0	0	0	0	0	0	0
Matang W.C.	Yes	50 ha	Lowland Dipterocarp, secondary forest	Release	0	0	0	0	0		Matang W.C.	0	0	0	0	0	0	0	0	0
Sabah																				
Crocker Range	No	2400	Hill Dipterocarp		0	3	2	3	?	1	Crocker Range	1	1	0	4	1	2	?		
Kinabalu	No	754	Hill Dipterocarp		0	3	2	3	?	1	Kinabalu	1	1	0	4	1	2	?		
Sepilok	Yes	43	Lowland Dipterocarp	Release	0	2	1	1	0	?	Sepilok	1	1	0	1	1	1	0		
Gomantong	No	90	Lowland Dipterocarp		0	2	1	1	0	1	Gomantong	1	1	0	1	1	3	0		
Kulamba	No	207	Freshwater Swamp		0	4	1	3	1	1	Kulamba	1	1	0	1	1	2	0		
Tabin	Some Translocated	1225	Logged Lowland Dipterocarp		0	3	1	3	1	1	Tabin	1	3	0	1	1	3	0		
Danum Valley	No	?	Hill Dipterocarp	No (past)	0	2	1	1	1	1	Danum Valley	1	?	0	1	1	1	0		
Kinabatangan	Yes	270	Logged Lowland Dipterocarp/Freshwater Swamp	Yes	1	4	2	3	3	2	Kinabatangan	1	5	0	1	1	4	0		
Sabah unprotected	No	26,000 km2	All types	No	?	?	?	?	?		Sabah unprotected	?	?	?	?	?	?	?		

Area	Orangutans Released?	Area Size	Habitat Types	Active Orangutan Research Site	Habitat Loss and Degradation					Small/ Isolated Population	Area	Land Use Policy			Hunting				Natural Causes	
					Mining	Logging	Fire	Encroachment	Drainage			Conversion to agriculture	Conversion to Plantation	Transmigration	Meat	Trade	Pests	Spiritual	Disease	Catastrophe

?=Unknown,
 1=Small problem,
 5=Large problem
 N.P. = National Park;
 F.R. = Forest Reserve,
 W.S. = Wildlife Sanctuary

Orangutan Reintroduction and Protection Workshop

15-18 June 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan,
Indonesia



FINAL REPORT

Section 5

Field Research and Release Sites Working Group Report

Field Research and Release Sites

How to Strengthen the Role of Research and Release Sites in Orangutan Conservation

DEFINITION OF CURRENT SITUATION

The goal of this group is to identify the role of research stations in orangutan conservation, develop criteria for the establishment of new study and release sites, suggest new sites for both activities in order of feasibility, find ways to support long-term field research, connect research and release activities, and develop recommendations for research protocols.

Research stations have been shown to play a major role in local conservation, in a variety of ways, but this important role is not widely recognized by both elected and appointed government officials, at least not by local officials, by local populations, by funding agencies. *Hence, the role of research stations should be articulated, and strategies should be developed to remedy this lack of acknowledgment.*

At present, research sites, and to some extent release sites have grown up in an ad hoc fashion, rather than being the product of systematic planning and surveying. *We need to identify the criteria that will ensure optimal, systematic coverage of the existing range. Based on these criteria, we should develop recommendations for the location of new sites for research and release.*

It is currently difficult to find funding, especially long-term funding, for field research, perhaps in part due to the poor acknowledgment of their importance in conservation. *We must identify ways to secure long-term financial support for orangutan field research.*

A universally recognized weakness of release programs is poor monitoring and follow-up. By integrating release programs more directly to studies of wild orangutans, the wild data will provide the reference and yardstick suitable for assessing the success of release programs. *We should therefore ensure good coordination between research and release programs to maximize the utility of research for release efforts.* The utility of information generated by research work for reintroduction work, and for proper documentation of the variability across existing sites will be maximized by standardized methods. *Thus, minimum standards need to be developed to allow effective comparisons across sites.*

At the outset, some definitions and clarifications may be useful. We refer to “in situ” as animals living in natural habitat, and “ex situ” as animals living outside natural habitats (i.e. animals in rehabilitation areas), whereas “released” animals are those that were released into natural habitat. Research sites: sites are defined as areas with a research station focusing on in-situ animals, a trail system and orangutans that are followed. We deal only tangentially with reintroduction and release issues (only to provide baselines for such activities). Release sites¹ must be equipped to support monitoring of the released animals, hence at least include a trail system. Ideally, monitoring should continue until animals reproduce.

¹ Release sites are sites in which previously captive orangutans have been released. Halfway houses are areas in which orangutans are being prepared for return to the wild (in so-called soft releases), and are therefore not permanent homes for the animals. *Release sites* legally are in areas without existing orangutan populations, unless there is overriding reason to introduce animals into existing populations that are well below carrying capacity and the reason for this can be addressed in the introduction project (e.g. if hunting is responsible we must create secure situation from hunting). The legal status of the release sites should be strong enough to provide some protection; in practice, this often means upgrading the official protection status.

Efforts must be made to integrate research at the release sites with those at the research sites, so that the data gathered at the research sites can serve as baseline and yardstick for the release projects.

THE ISSUES AND THEIR SOLUTIONS

1. The role of research stations

The role of research stations in improving orangutan conservation is very important in many ways, and this role is insufficiently acknowledged. The following list of benefits of research is based on empirical evidence gathered in several research stations in Indonesia and elsewhere. Orangutan research in particular has this potential because of the enormous emotional impact of the orangutan on people touched by it. The benefits are organized in three major categories:

- Direct Conservation Benefits
 - The presence of research stations has a deterring effect on poachers, hunters, and shifting cultivators (whose impact may extend into neighboring forests through the fires they set); researchers in effect provide free patrols that generate the vital intelligence for the conservation management authority to mount effective law enforcement operations. Indeed, because research stations are the last to be affected by lawlessness and illegal logging, it can be argued that in terms of efficiency (conservation impact per unit investment) research stations are among the best conservation investment that can be made.
 - Without long-term research, vital information upon which to base management of orangutans, cannot be collected, and orangutan in situ management will be an art rather than a science. This research is also essential to generate the background knowledge needed to evaluate the suitability for orangutans of potential reintroduction sites.
- Indirect Conservation Benefits
 - Economic benefits to local communities:
 - Research stations provide employment opportunities to local communities, in areas that are usually economically depressed, and thus support the local economy, and thus gather support for conservation.
 - Research stations are perfect seed sites for ecotourism enterprises. They generate the awareness of the general area (nationally and internationally), the experience of local staff that can subsequently be mobilized for the ecotourism activities (they understand tourists), and may help to attract funding for ecotourism. In this way, research stations have already contributed considerably to income generation by stimulating ecotourism enterprises in their vicinity. In the future, better integration of research stations and ecotourism can generate even more benefits.
 - Political influence on conservation policies:
 - Research stations can affect local and regional policies by affecting the information and attitudes of local decision-makers (local government and representatives) through promotion of the values of conservation during visits to the stations. This is especially important now that regional autonomy has given much more power over land-use decisions to local and regional governments.
 - Awareness of value of conservation, both locally and more generally:
 - Local field assistants tend to become major ambassadors for conservation in their own villages; they are much more effective than researchers from other areas or countries. These assistants can also acquire many valuable skills during their routine work activities that they can use when they move on in their career outside the research stations (the stations serve as informal training ground for

intelligent local people with modest educational backgrounds, e.g. in engine maintenance or radio operation).

- Research stations generate data and information needed for outreach and raising awareness, locally, nationally and internationally.
- Research stations can play a role in conservation education through school outreach programs, university courses, student training, and advanced degree research projects. They not only provide training opportunities for students who later go on into non-conservation related careers, but also for professional training of forestry and conservation service staff. Having occasional courses at a station will affect the lives of many students, who are the nation's future leaders.
- Stations form a perfect breeding ground for conservationists; students that spend some months studying wild great apes will come away as life-long conservationists.
- Research sites can produce valuable data for the documentation of orangutan traditions and for the evaluation of hypotheses to explain them. Better understanding of traditions, given the insights they generate into the origins of human culture, may help to raise significantly more support for orangutan conservation.

- Other Benefits

- Stations can form the platform for partnerships between Indonesian and foreign research communities.
- Research stations provide the conduit for the transfer of traditional and informal knowledge about the forest and serve to make this knowledge more broadly available and create opportunities for the perpetuation of this valuable knowledge.

In addition to these enormous benefits, there may be disadvantages

- Research stations may affect local cultures and create some economic imbalance (e.g. in Kayan-Mentarang providing salaries commercialized local communities and increased hunting pressure).
- When they are not effective, the increased access provided by research stations brings about higher poaching pressure.
- In times or areas of anarchy, orangutan research stations do not improve the conservation status of the area. However, even where conservation collapsed, the study sites were the last to be affected, and in those cases, nothing stopped the destructive forces.
- Although direct negative impacts on orangutans have so far fortunately not been documented, it is possible that habituated orangutans that have lost their fear of people, become crop raiders.
- Research stations that spawn major ecotourism development might lead to mass tourism and negative environmental impacts.

These negative impacts can all be avoided, with the exception of the impact of total anarchy. On balance, therefore, the benefits of research stations for orangutan conservation are very strong. Hence, we need to convince others of the enormous and poorly recognized values of these stations, so that their potential can be maximized. Strategies to achieve this are spelled out here:

- Put the information contained in this report on the web site of the orangutan network (www.orangutannetwork.net), and create links to sites of all regional universities.
- Make the information available to the donor community, to institutes controlling the scientific work in Indonesia and Malaysia (e.g. LIPI-Puslitbang Biologi, and Sarawak Biodiversity Research Council), and to the conservation agencies in both countries.

- All participants commit to proselytize in their own institutions.

2. Criteria for establishment of sites

2.a Research sites

Since research sites are so important, and given limited resources, we must ensure optimal coverage of the whole range in the establishment of a network of orangutan research stations. Here, we list the criteria for minimum coverage of the stations. We should stress that these are minimum coverage requirements, because the comparative study of orangutan cultures is served by as dense a network of active research stations as possible. The criteria are of two kinds, first with respect to their location, and, second, with respect to the nature of the facilities. The latter are more technical, and our main focus will be on the first.

In order to achieve balanced coverage, the following criteria for the siting of orangutan research stations were developed:

- Biogeography: the two islands, and on Borneo the different taxonomic units (possibly subspecies), based on Warren et al. (2001).
- Political boundaries: representation is needed in Sarawak, Sabah, and each province in Indonesia.
- Legal status of area: at least one station in each national park with orangutans; but we should also establish stations in other areas where opportunities exist for upgrading the legal status, and thus protection, of the areas.
- Habitat types: ideally, all habitat types should be represented. New sites should be established preferentially in habitats as yet not represented in existing sites.
- Research interests: develop stations around existing research interests or generate the interests before investing in stations.
- Academic infrastructure: stations need to be sustained by a formal link with an existing university inside the same political unit.

Table 1 lists the minimum requirements for the coverage of research stations, based on these criteria. The minimum scenario, reflecting priorities, includes stations in the range of each species, in each taxonomic unit, and in each political unit. The species are in the two islands. Borneo has four provisionally recognized sub-units, perhaps corresponding to subspecies (Warren et al. 2001). Political units are the states in Malaysia and the provinces in Indonesia. Ideally, each national park or other major protected area containing sizable orangutan populations should also have an active research station.

At present, only minimum coverage has been attained and significant gaps remain. Recommendations in order of importance and urgency are as follows:

1. Support existing long-term research sites (many of which are under considerable pressure);
2. Ensure the presence of at least one active long-term site per province or state;
3. Support the establishment of sites in each protected area containing sizable orangutan populations;
4. Support the establishment of sites in non-protected areas containing important orangutan populations (and support efforts to change the legal status of those forests).

We identified the following gaps in coverage:

1. Sumatera Utara at present has no active research station, and needs to develop one. Recommended sites for investigation include, in order of priority: Bukit Lawang, Besitang, Gunung Air (Dairi).

2. The absence of any orangutan research effort in Sarawak is a serious deficiency and should be remedied by developing a project in either Lanjak-Entimau or Batang Ai national park, where research facilities are or will soon be available as infrastructure.
3. Research in pygmaeus unit 3 is not yet underway, but clearly vitally important for complete coverage. Current efforts to establish a site in Betung-Kerihun should be fully supported.
4. In pygmaeus unit 3, Danau Sentarum with locally the highest known densities of Borneo deserves a research station.
5. In the pygmaeus unit 1, Bkt. Baka / Bkt. Raya, is the only national park in the unit without an active research presence on orangutans. Because the presence of orangutans is not confirmed there, it is recommended that a survey is undertaken to examine the need for a research effort.
6. In the pygmaeus unit 1, the most important concentration of orangutans in Borneo, there may be major, as yet undocumented, regional differentiation, and thus the three existing stations should be maintained, especially since they cover very divergent habitat types.

Research stations will obviously provide opportunities for other research as well. They may also involve other players, such as the Indonesian Primatological Association (APAPI) and local NGOs. Two maps (page 103) provide an overview of orangutan distribution and major protected areas in Indonesia.

A second set of criteria refers to aspects of infrastructure:

- HOW (Infrastructure, etc.): Ensure sufficient research capability without negatively affecting the environment or the orangutans.
- Location: only essential facilities for research are allowed inside protected areas, and all other facilities are preferably located outside. Plans have to be in compliance with government regulations for facilities (e.g. the conservation service's regulations in national park zones). Obviously, sensible waste management policies must be in place.
- Carrying capacity: the number of active researchers depends on the size of the study area; it should be limited below the level where environmental impacts become visible (e.g. trampling in understory and clear impact on forest regeneration), and below the number where orangutan welfare is clearly affected. Thus, a maximum of 2 individuals per focal orangutan is a reasonable guideline.
- Where orangutan stations are to be merged with ecotourism operations, care should be taken that the ecotourism activities will not affect the orangutans' welfare, i.e. strict non-interaction rules, in compliance with international codes of conduct, and under strict monitoring by orangutan researchers who should advise relevant government authorities when activities affect orangutan well being or habitat quality.

2.b Release sites

This group did not consider the siting of release sites in any detail, except to note that the taxonomic coverage of the existing and planned release sites seems adequate.

3. Funding

Funding for research efforts has traditionally been difficult to obtain. First, research on long-lived animals is difficult to support over the long run, even though this is essential, because scientific funding agencies tend to support short-term efforts. Second, the important role of research stations has been under-appreciated by the conservation organizations. In practice, it has been easier to obtain funding for releasing animals than for doing in-situ conservation. There are two major ways in which we can strengthen funding for orangutan research. First, the traditional sources of funding can be approached

with more effectiveness, based on the prioritization and the clarification of the important role of research stations. Second, non-traditional sources of funding can be identified.

The traditional sources of research funding include governments, international organizations such as International Timber Trade Organization, MAB, WWF, etc. To them, the conservation payoffs of research can be emphasized more in order to improve their willingness to support what is generally seen as pure research. Traditional sources for field research remain active players, and the increased coordination of orangutan field research and the increased payoffs emerging from that should also strengthen the ability of individual researchers to acquire funding. Sources in this category include, for instance, National Geographic Society, Conservation International, Primate Conservation Inc, Margo Marsh Foundation, Wildlife Conservation Society, Leakey Foundation, Wenner-Gren Foundation, Royal Geographic Society, and the Morrison Foundation. The final source of funding for field research are the international development agencies, such as Japan International Cooperation Agency, US Agency for International Development, the European Union, and various development organizations of European countries. Some of them have recently taken an active interest in great ape conservation as a result of the publicity generated by the reports of serious declines. Now that the important role of field stations in conservation, education, awareness building and training is gradually becoming more apparent, these organizations should be more willing to invest in research activities. The recent initiatives by USAID and the GACA funds managed by the USFW service exemplify wonderful opportunities in this direction.

In addition, however, there may be opportunities to obtain funding from non-traditional sources. First, the organizations concerned with orangutan well being and heavily involved in the reintroduction efforts should ideally be integrated with at least one research site that studies wild populations, because, as we shall see below, these populations produce valuable baseline data against which to evaluate the effectiveness of reintroduction programs. Thus, organizations such as OFI, BOS, the Gibbon Foundation, and IFAW should be approached with this idea. Second, zoos in the industrialized world are increasingly becoming aware that their primary role is in raising conservation awareness and providing thorough information on the conservation status and the background of the species they have on exhibit. The existing website of the Orangutan Network (www.orangutannetwork.net) has been established for that purpose, but has so far had limited success in raising funds for field sites, perhaps because a more direct approach is needed that targets all major zoos with orangutan exhibits. Third, joint efforts with non-commercial organizations and businesses may be very effective in some cases. Examples include Trekforce, an organization that supports the building of infrastructure through volunteers, Earthwatch, an organization that supports field research by sending (paying) volunteers to participate in the research. One can also think of joint ventures with ecotourism companies, where appropriate, who would benefit from the research effort by acquiring access to good will, knowledge and people who can serve as staff in the ecotourism enterprise. Finally, national governments should consider funding long-term orangutan research through the conservation service, in the form of providing and maintaining infrastructure and other forms of in-kind support.

In all of these efforts, it is useful to emphasize that orangutan field research efforts are now coordinated through the orangutan network, and that duplication is avoided and coordination and leverage effects are maximized through comparisons and standardization. Thus, by supporting a local research effort, many additional benefits are realized. Past experience has shown that investing in field research efforts is among the most cost-effective ways of achieving long-term conservation success.

4. Research and release

Research projects can be useful to release efforts in three different ways. First, the exact locations of release sites need to be identified based on ecological information collected in the studies of wild populations. This information is manifold, but includes both data on diet, food preferences, seasonal and

other temporal shifts, and overall productivity. The carrying capacity of release areas can only be estimated through detailed field studies of wild populations. Studies of wild populations can also provide the synecological background to be used to estimate the impact of release on other species in the system.

Second, release projects need to monitor their effectiveness by collecting ecological and demographic data on the released animals. Only thorough information on wild populations can provide the benchmarks for reintroduction, by providing the range of values for all relevant variables in the given environmental conditions. Thus, the success of release projects should be judged by the degree to which the released animals have reached the range of values expected on the basis of wild animals in a similar habitat (this is why baseline data on wild animals are needed for a variety of sites, differing in habitat types). A list of variables to be minimally collected is appended below.

Third, field research projects can help train staff involved in the monitoring of the released animals.

Hence, release projects need the support of research projects. Exchange of staff, workshops, and advising relationships are all ways to link them. We recommend that a formal linkage is established where a release project financially supports a research project in a habitat similar to that of the intended release site, and where the researchers are actively involved in the post-release monitoring.

List of ecological, social and demographic variables to be collected at release sites

For proper evaluation of the release projects we need to minimally estimate the following variables, baseline ranges of which have been produced in the research projects:

- Daily travel distance, and total travel time
- Length of active period
- Positional behavior, including % time on the ground; record locomotory behaviour to see if there is a difference between wild and rehabilitated individuals.
- Feeding time per day, feed/travel ratio, mean patch residence time for fruit trees
- Diet: % fruit; % vegetable matter; % cambium; % insects; % flowers; % meat; % other food items
- Diet: list of food species and of fruit types
- Resting time during active day; number of nests built per day
- Climate, including rainfall, sunshine, temperatures, humidity.
- Habitat features:
 - mean productivity (% of trees with young leaves, flowers, all fruit, ripe fruit);
 - seasonality and interannual variability (from same phenological data base);
 - floristic inventory
- Home range size (for each age-sex class)
- (for released animals:) distance between center of activity and release point

Social variables:

- Mean party size per individual
- Rates of social encounters
- Rates of food sharing, co-feeding (+ combinations in which this occurs)
- Rates of long calling per hour
- Rates of mating behavior (and relative number of cooperative, tolerated and forced matings)

Demographic variables:

- Population density (individuals per sq. km)
- Adult sex ratio; infants per adult females; interbirth interval (where available)
- Relatedness among resident animals (for analysis of rare variants)

As to the research activities, we also have recommendations for the sites.

Research Priorities

- Assessment of habitat quality, in part through work at single sites and in part by explicit comparisons between sites.
- Assessment of the short-term and long-term effects of selective logging in different geographic areas (e.g. Borneo has seen fewer studies than Sumatra- can results be extrapolated?)
- Assessment of the validity of the current taxonomic subdivisions in Borneo (genetically, morphologically, behaviorally)
- Assessment of impact of forest fires on orangutan populations, in terms of numbers and demography
- Further refinement of methods for rapid surveys of orangutan density
- Survey of promising areas with protected status but unknown orangutan populations: Sangkulirang, Muara Kendawangan,

ACTION STRATEGIES FOR IMPLEMENTATION

Stressing the vital role of research for in-situ orangutan conservation

We, the working group members, will use the information contained in this report to inform (and appeal to) local, regional, national, and international agencies of the extreme conservation value of orangutan research. The main message to be broadcast is that the most cost-effective way of achieving conservation is to support long-term field research stations. Ideally, effective slogans are to be developed (e.g. Research to save orangutans!). Target groups for the dissemination of this information are:

- Funding agencies, such as embassies and development agencies, zoos, foundations, conservation organizations, and charities and private donors, and potentially through international funds specially earmarked for great ape conservation.
- Management authorities, such as different levels of government, wildlife/forestry authorities.
- Research authorities who should be encouraged to assign higher priority to long-term orangutan field research than in the past, and should remove unnecessary obstacles to research clearance (“cut the red tapes and weave it into red carpets”; or: “no red tape for the red ape”).
- Researchers, at universities, NGOs and elsewhere.
- Commercial companies that exploit natural resources.
- Media. All of these parties are approached directly, but also through media interested in conservation issues (press, radio, television, web).

These parties will be approached as follows:

- Conservationists will write articles and contacting journalists so as to reach a broad readership, and contact local and national radio and television stations (e.g. bi-weekly radio program in Kuching on conservation issues; magazine articles; TV magazine programs);
- Conservationists will utilize existing conservation-oriented web sites and link smaller general-interest sites with them (e.g. the orangutan network [www.orangutannetwork.com], which is linked to numerous other sites), and to a list serve (e-mail group) that unites all individuals interested in orangutan conservation.
- The participants of the workshop will distribute copies of the workshop report to potentially interested parties.

Prioritization of research site coverage

In order to ensure optimal coverage of the taxonomic and political units within the orangutan geographic range, we must support existing sites and establish new sites in all major units. We have identified the minimal needs, and in order to fill them, we developed a two-step strategy. First, we use the existing information networks mentioned above to make the research needs known to potentially interested parties (management authorities and potential funders). Second, we want to advertise this need to the research community, in order to attract dedicated, key individuals.

Funding

Significant funding agencies have been identified above, and information on the importance of long-term research for orangutan conservation will be provided to them. Hence, no separate activities are needed to acquire adequate and sustained funding for long-term research sites.

Connecting research and release activities

For the successful implementation of release projects the expertise generated in long-term research sites is essential. We will make available the web site of the orangutan network to link up research sites and release projects. We encourage project-twinning, based on habitat similarity, proximity, and political units (as laid out in Table 1). They involve a release project financially supporting a research project in exchange for expertise from the research project (training, staff, benchmark values for evaluation of project).

Standardized research protocol

The variables necessary for evaluating the successful progress of a release program have been identified. The benchmark values for these variables are becoming available at multiple sites across representative habitats. In recognized areas not yet represented potential new research sites have been identified. This information will be made available to all five currently active release projects, and post it on the above-mentioned network for all interested researchers and institutions worldwide.

Working group members: Andrew Alek Tuen; Kade Sidyasa; Kunkun Jaka Gurmaya (Reporter); Marli bin Suali; Michael Huffman (Facilitator); Mohd. Ahbani bin Abulani; Helen Morrogh-Berrard; Ivona Foitova; Reniastoetie Djojoasmoro; H. Takahashi; Carel van Schaik (Recorder); Trio Santoso.

Table 1. Analysis of priority research sites

Island	taxon	Province/ State	Prot. Area	Study site	Release Site	University connection
S	abelii	Aceh	Leuser	Ketambe	--	Syiah Kuala
S	abelii	Sumatera Utara	Leuser	{Besitang}	Angkola, Bkt. Tiga Puluh	Univ. Sumatera Utara
B	pygm., 1	Kalimantan Barat	Gunung Palung	Cabang Panti		Univ. Tj. Pura
B	pygm., 1	Kalimantan Barat	Muara Kendawangan	--	--	Univ. Tj. Pura
B	pygm., 1	Kalimantan Tengah	Bkt.Baka/ Bkt. Raya	{station available}		
B	pygm., 1	Kalimantan Tengah	Tj. Puting	Camp Leakey	Lamandau	Univ. Lambung Mangkurat
B	pygm., 1	Kalimantan Tengah	[Sebangau]	NatLab		Univ. Palangkaraya
B	pygm., 1	Kalimantan Tengah	[Katingan]	--		
B	pygm, 2	Kalimantan Timur	Kutai	Mentoko	Meratus	Univ. Mulawarman
B	pygm, 2	Kalimantan Timur	Kayan- Mentarang	(OU very rare)		
B	pygm, 2	Kalimantan Timur	Sangkulirang	--		
B	pygm, 3	Sarawak	Lanjak- Entimau	{being built}	Matang Wld. Ctr.	Unimas, Kota Samarahan
B	pygm, 3	Sarawak	Batang Ai	{available}		
B	pygm, 3	Sarawak	Maludam	--		
B	pygm, 3	Sarawak	Sebuyau	--		
B	pygm, 3	Kalimantan Barat	Danau Sentarum	--		{Un. Tj. Pura}
B	pygm, 3	Kalimantan Barat	Betung- Kerihun	Nanga Potan		{Un. Tj. Pura}
B	pygm, 4	Sabah	Kinabatangan	Kinabatangan	Sepilok, Tabin	UMS, KK
B	pygm, 4	Sabah	Danum Valley	Danum		

Table 2. Overview of previous, existing and potential research and release sites of orangutans.

Site	Country	Active since?*	Study/ Release (S/R)?
Lanjak-Entimau	Sarawak	Potential	S
Batang Ai	Sarawak	Potential	S
Maludan	Sarawak	Potential	S
Sebuyau	Sarawak	Potential	S
Kinabatangan	Sabah	1998	S
Danum Valley	Sabah	1990s	R
Sebangau (non-prot)	Kalimantan Tengah	1995	S
Katingan (non-prot)	Kalimantan Tengah	Potential	S
Kutai	Kalimantan Timur	1972	S
N of Kutai (non-prot)	Kalimantan Timur	Potential	S
Betung Kerihun	Kalimantan Barat	2001	S
Gunung Palung	Kalimantan Barat	1983	S
Tanjung Puting	Kalimantan Tengah	1971	S
Danau Sentarum	Kalimantan Barat	Potential	S
Bkt Baka/Bkt Raya	Kalimantan Barat/ Tengah	Potential	S
Ketambe	Aceh Tenggara	1971	S
Suaq Balimbing	Aceh Selatan	1992-1999	S
Soraya	Aceh Selatan	1994-2000	S
Bukit Lawang	Sumatera Utara	1999	S
Sikundur	Sumatera Utara	Potential	S
Semengoh	Sarawak	1971	R
Matang Wildlife Ctr	Sarawak	1998	R
Sepilok	Sabah	1970s	R (+ pot. S)
Tabin	Sabah	1990s	R
Tanjung Puting	Kalimantan Tengah	1972	R (W**)
Batikap	Kalimantan Barat/Tengah	Potential	R
Barabai	Kalimantan Tengah/Timur/Selatan	Potential	R
Meratus	Kalimantan Timur	1998	R
Sungai Wain	Kalimantan Timur	1993	R
Lamandau	Kalimantan Tengah	2000	R (W-few)
Bukit Lawang	Sumatera Utara	1973	R (W)
Ketambe	Sumatera Utara	1972	R (W)
Tiga Puluh	Riau	Potential	R
Angkola	Sumatera Utara	Potential	R

* Those sites with an end date are no longer active; those without an end date are current sites.

**W stands for wild population. In combination with the R for release site, this indicates existing or former sites no longer "eligible" to be release sites because there is an existing wild population.

Figure 1. 1996-1997 Orangutan Distribution Map (Rijksen and Meijaard, 1999)

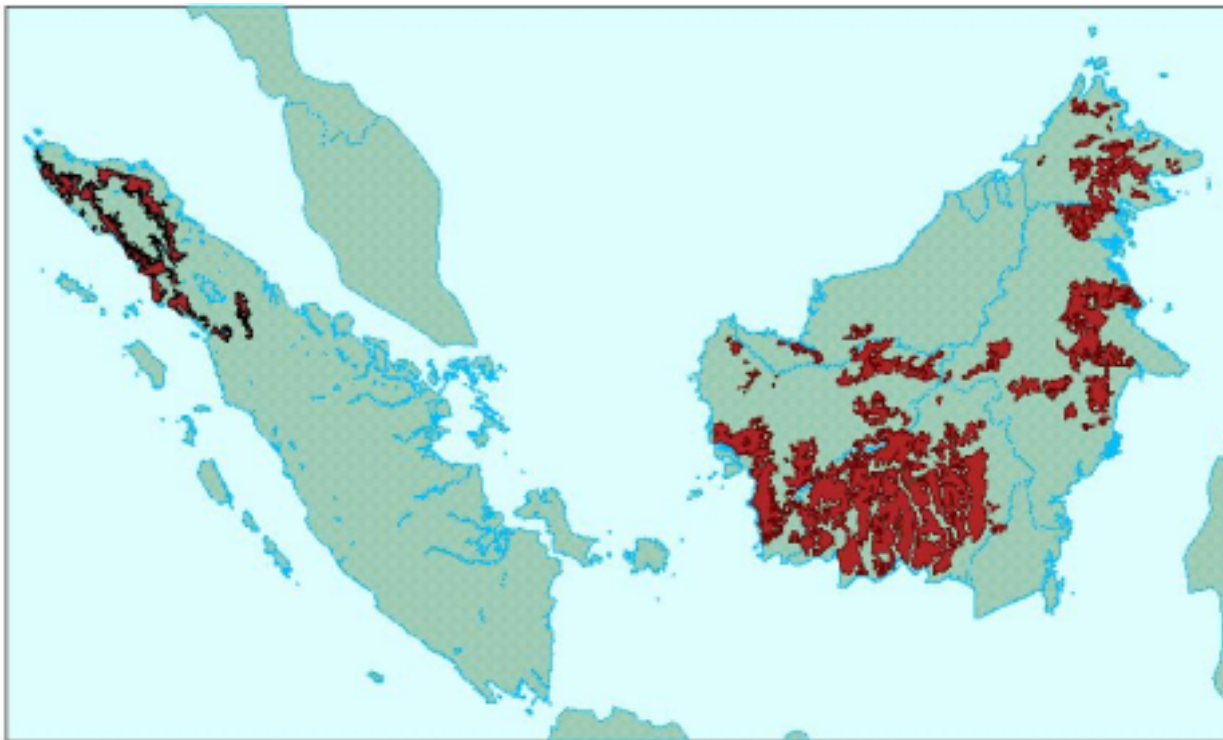


Figure 2. Protected Areas Map (Rijksen and Meijaard, 1999)



Orangutan Reintroduction and Protection Workshop

15-18 June 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan,
Indonesia



FINAL REPORT

Section 6

Socioeconomics and Governance Working Group Report

Socio-Economic and Governance Issues

Topics identified in plenary to be considered by this working group included:

1. Trade: internal and external/ demand (CITES and International Conventions)
2. Community development
3. Poverty/economic development
4. Economic and government policies
5. Corruption
6. Decentralization
7. Democracy
8. Transparency
9. Coordination of government sectors
10. Natural resource conflict
11. Social conflict
12. Land tenure reform
13. Commercial exploitation
14. Participation of local communities (empowerment)
15. Value of the orangutan to local peoples and government
16. Orangutan conservation

Summary

The underlying or root causes of habitat degradation and poaching include poor governance, social conflicts, and economic disparities. Given the complexity of these issues, the group's participants were only able to address broad topics, and did not have time to address specific issues in depth.

Indonesia's governmental regulations and laws are complicated, often contradictory, and contain numerous loopholes. Legal comprehension of environmental regulations is poor, even within the ministries. For example, despite the fact that The Biodiversity Conservation Act of 1990 forbids logging and mining within national parks, the Ministries of Forestry and Mining have written a joint decree allowing these activities to occur.

Socioeconomic and governance issues need to be attacked at a macro level, as opposed to a site based approach, in order to be effective. Threats to habitat are rarely confined to actors originating in a single site.

Decentralization may provide a real opportunity to obtain more forest area for conservation purposes, given the power shift to the local government. Local governments are now empowered to make new regulations that can protect new areas. On the other hand, decentralization may pose a major conservation problem because local governments must now generate their own revenues. The easiest way to raise local revenues is through increased natural resource extraction. In addition, due to the breakdown of law enforcement, local communities have increased extraction from formerly protected areas.

Indonesia has suffered from a multi-dimensional crisis (political, social and economic) since 1997. This crisis has led to increased violence, and the degradation and conversion of Indonesia's forests. For example, illegal logging has increased in both forest concessions and protected areas. In addition, the illegal wildlife trade (for pets and bush meat) and illegal mining have also increased.

International development agencies often focus on poverty alleviation as opposed to environmental issues, which underlie poverty. A major issue regarding community development around national parks is that communities view the forest as a deterrent to their economic development, not as an asset. This prevents communities from actively participating in the conservation of their areas. Therefore, conservationists have to work with the international agencies to focus on the economic benefits of conservation, which in turn will help the local communities surrounding the national parks and forested areas.

These issues are broad; therefore our recommendations are intended to give general direction, and not necessarily to dictate specific actions. Our hope is that these suggestions will be reviewed, expanded upon, adopted by the conservation community, and integrated into mainstream conservation activities. Many of these activities are currently being undertaken at specific sites by various NGOs, through bilateral and multilateral agreements, and by universities. The majority of these activities cannot be undertaken by a single individual, or even a single organization, but will require concerted effort by multiple parties.

We grouped our issues into four main topics for discussion:

Trade/Demand: CITES, internal and external demand, development aid

Development: economic development, community development, exploitation, economic issues, resource valuation

Government Evolution: decentralization, democracy, transparency, corruption, coordination of government sectors, government policies as they relate to resource management

Conflict/Empowerment: social (transmigrations), natural resource conflicts, land tenure reform, participation of local governments

Trade/Demand

1. CITES and other international treaties are not always used as effectively as possible to combat illegal activities.
2. Internal and external market demand is a strong driver of forest degradation and conversion.
3. Development assistance is often designed to increase demand for products originating in the donor country.

Strategies/Actions

- Select species for CITES listing for which the primary international market is "eco sensitive" countries.

Identify threatened species of interest with known export trade value, review export data to identify primary market, and select a subset of threatened species that have their primary import market in eco-sensitive countries. Get the species listed if appropriate.

Responsible Party: Carey Yeager will review overall timber trade and effectiveness of the listing of ramin (a commercial timber recently listed on CITES appendix III) as a first step.

Timeline: 1 month

Resources required: time

Measureable outcome: Brief report to determine if additional effort should be expended.

- Higher education/awareness levels can decrease demands on certain specific natural resources. Targeted awareness/education campaigns focused on the internal and external market demand should be conducted. The language used to educate people living in local communities should be appropriate and easily understood.

Design and conduct attitude surveys, then analyze those surveys by age/sex/education variables in order to identify target groups with the greatest potential impact on the issue. Have experts (e.g., social psychologists) develop specific awareness/educational materials to effect change in attitudes and behaviors. Implement campaigns through university students, research institutions, and NGOs.

- Boycotts and lobbying in "consumer" countries to reduce demand or divert to sustainable sources.

Consumer based action activities may include eco-labeling products that affect land use in orangutan habitat (e.g., oil palm and coffee). Another activity might be lobbying in consumer countries in order to get governments to increase import restrictions for forest products.

A greater awareness needs to be created in all countries regarding the exploitation of orangutans in advertising and media.

- Increase sustainable economic alternatives for local communities. Economic development should be provided in conjunction with binding conservation agreements to protect prime orangutan habitat.

Identify communities to be targeted based on potential impact to prime orangutan habitat. Develop a network between local communities through binding conservation agreements to help identify primary sources of income and market opportunities. If the primary sources are non sustainable, identify alternative forms of sustainable income generating activities through the use of guided participatory processes.

- Lobbying within donor countries to allow for a larger percentage of the aid funds to be spent in recipient countries.
- Aid agencies should assign both conservation and development specialists to work together to prevent environmental abuses, yet still allow for economic alternatives. Development aid needs to be more closely monitored.

Development

1. The low valuation of forest services is a greater driver of environmental degradation than poverty (as it is perceived by Western standards).
2. Government policies do not involve local communities in decision making for forest protection and forest exploitation.

3. Government bureaucracy and policies inhibit participation by local interested groups in the management of protected areas.
4. Resource valuation may not be the most effective tool for placing a value on an individual species, as the species' value may be non-monetary or is as a part of a complex interconnected eco-system.

Strategies/Actions

- Educational awareness campaigns incorporated into school curriculums. Local and national media campaigns focused on Indonesia's wildlife.

Design and conduct attitude surveys. Analyze surveys by age/sex/education variables in order to identify target groups with the greatest potential impact on the issue. Have experts (e.g., social psychologists) develop specific awareness/educational materials to affect change in attitudes and behaviors. Implement an awareness campaign in collaboration with university students, research institutions and NGOs.

Develop tours of national parks and research stations for local school children and all members of the community. (Model: Gunung Palung)

Enable students who are interested to pursue conservation as a profession. These students will hopefully then be integrated into political decision making roles.

- Emphasize concrete values provided by forest that all people need and understand, such as access to water. A government tax on industrial water use might underscore this. That tax can then be channeled back into forest protection and restoration, i.e. a tax on use of an ecosystem's services.

Certain NGOs are already working towards this goal, but a department in the central government is needed to deal with these issues.

- Allow conservation areas to be privatized, and resources within the parks to be managed by charging use fees. For example, tourist concessions within parks could be sold for private management. Activities within privately owned concessions should be monitored and facilitated by the government.

This is in place for a few parks (Gunung Gede Pangrango and Komodo National Parks).

- Whenever policies are being reviewed or initiated about a specific area, the local government (which is hopefully representing their community) should be involved and included in those meetings so they can have some say in the decision making process. The Tata Guna hutan kesepakatan (Forest Unitization Planning) agreement needs a provision for the holding of public hearings.

- Innovative new methods need to be encouraged to find funding for conservation. *Debt for nature swaps, carbon sequestration projects, trust funds, and eco-tourism are all possible financing mechanisms.*

Responsible Party: Carey Yeager (DNS) and Jatna Supriatna (all)

Timeline: on-going

Resources required: time, money

Measureable outcome: Increased funding for habitat conservation

Government Evolution

1. Decentralization has been implemented rapidly, without:
 - appropriate personnel and policies in place to protect the environment
 - coordination between government sectors at different levels
 - sufficient operating budgets, thus leading to non-sustainable pressure on the natural resource base and the degradation/conversion of forests.
2. Democratic processes are resisted by some political party leaders and still poorly understood by both government and communities. Standard operating procedures for natural resource decision making are not transparent and are incomplete, thus making corruption possible and leading to non-sustainable pressure on the natural resource base and the degradation/conversion of forests.

Strategies/Actions

- Governmental regulations need to be simplified for privatization and management of state forest lands. This could include workshops on democratic processes for party leaders, government and community leaders.

A possible action is to contact Indonesian Associations (such as the Indonesian Primatological Association) that are present in multiple provinces. International and national aid agencies, and NGOs may also be able to help.

- High priority areas for orangutans must be identified. The key district officials in those areas should be provided with expert assistance in the following areas: planning/budgeting/ecology and legal/judicial. This information needs to be continually updated to reflect continuing changes.

A potential action is to establish a Model Forest council - a forum that allows stakeholders to meet to discuss management decisions.

Another idea is to create Standard Operating Procedures for natural resource decision making for government representatives.

- Use existing law enforcement and judicial system and retrain personnel in environmental crimes. Set up an environmental court set up to deal with those crimes.

NGOs and local universities should be involved, and help aid the courts in setting up and implementing non-corrupt law enforcement. A corruption watch has been established at the national level. This needs to be expanded, with local branches. NGOs could assign a legal officer to work together with other similarly assigned legal officers. The corruption watch branches should be involved in orangutan protection efforts.

Conflict/Empowerment

1. Lack of clear natural resource management policies leads to inequities and thus disputes between central and local government and local communities.
2. Conflicting laws regarding land tenure issues in Indonesia lead to uncertainty in the demarcation of land ownership.

Strategies/Actions

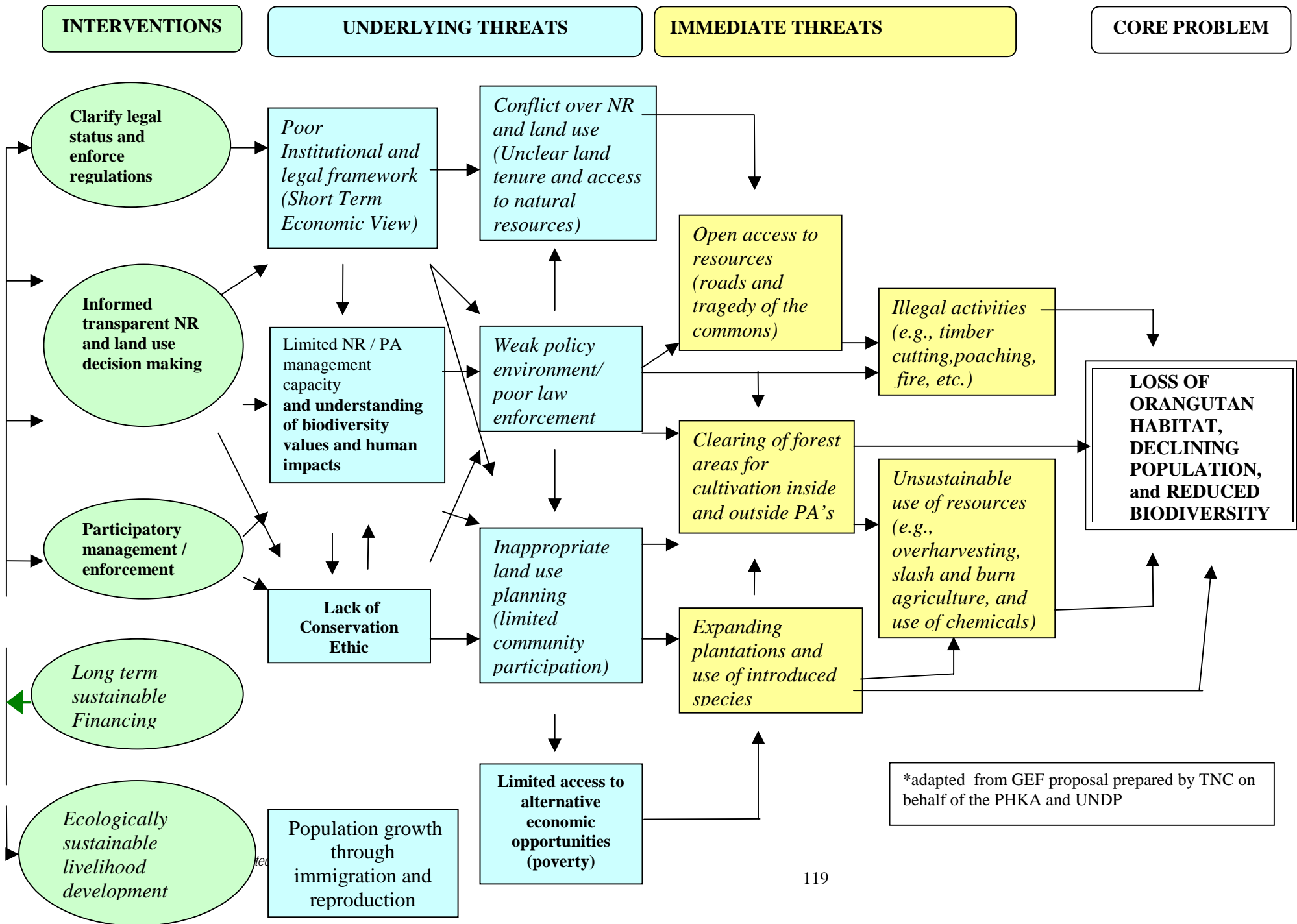
- Develop clear natural resource management policies at the appropriate levels and engage the central and local governments of Indonesia in the areas of conflict.

The development of important conflict avoidance and resolution training, especially in areas of land tenure is essential. A coordinating body is needed to effect natural resource conflicts.

- Local communities need to be provided with legal and technical expertise to enable local people to register their land titles, where feasible. This should be done in conjunction with natural resource management plans for the areas.

Working group members: Suherry, Jatna Supriatna, Dulhadi, Adi Susilo, Andrea B, Christine Mallar, Wayne Johnson, Carey Yeager, Ann Patterson, Herman Rijksen, Djameludin Suryohadikusumo, Raffaella Commitante

CAUSAL CONNECTIONS*



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FINAL REPORT

Section 7

Public Awareness and Education Working Group Report

Public Awareness and Education

Introduction

There is very little knowledge in the general public worldwide of the fate of the orangutan and of the imminent threat to its survival. The public picture of the orangutan is either of an animal of no consequence or a cute little ape that can be used as a pet. The attitude of local people towards wild animals is utilitarian. Orangutans may play a symbolic role in some cultures where they originate (as substitutes for humans in rituals such as headhunting) but this may not be to the advantage of orangutan conservation.

This lack of knowledge and appreciation is an important issue in that any conservation issues to be implemented rest on the appreciation of the orangutan and its environment and the benefits to the Indonesian and Malaysian people. Only with appreciation and direct material benefits will there be a sound foundation for formulating and implementing laws as a measures to be taken to safe guard orangutans.

There are NGOs that are running campaigns at this time. So far their efforts have had limited success in bringing the plight of the orangutan to the national and the international consciousness. This is possibly due to a lack of adequate resources and limited coordination.

The orangutan offers a beautiful opportunity to be used as a flagship species and to present it as a national emblem for Indonesia. By promoting it as an emblem it should be possible to raise adequate awareness and national pride to develop the necessary support for its conservation. By conserving the orangutan, its environment will also be safeguarded. This will protect soils, streams and forests, and their respective wildlife which are all important to people and will contribute to an ecologically balanced environment.

A drastic change of the national attitude is required because of the imminent threat of vast environmental destruction and the prediction that if this continues the orangutan will disappear from the wild in ten to twenty years. A major effort to bring this into the national and international consciousness is required. Campaigns have taken place in other countries that brought critical issues of species conservation to the national consciousness of those countries. Consideration is needed as to how to accomplish this in Indonesia and Malaysia.

Our working group has identified three targets to which education and awareness should be directed:

- Local Communities- people living near or in orangutan habitat
- National Awareness- Indonesian and Malaysian populations
- International Community

Issue 1: Local Community Education and Awareness

The average Indonesian may not know very much about orangutans or forest areas. There is a general lack of information, lack of concern, and interest. Thus, we have to bring information to local communities so that they become interested in the problems. It is very important to have support from local people and local communities. Many Indonesians do not know how to participate to protect orangutans and have a very different perception of what conservation means. Indonesians may know that orangutans are a protected species, but it may not be very important for Indonesians and other local communities to protect orangutans. Lack of national and community pride, the role of religion and a widespread utilitarian view of wildlife are issues that need to be acknowledged when it comes to changing people's perceptions.

Although there is a general perception that Dayak communities are in touch with nature, local communities are very diverse throughout Kalimantan, and such a characterization is reductionistic. For example, in Taman Nasional Gunung Palung, most local communities are transmigrants and loggers that have come from outside of Kalimantan. Furthermore, while some Dayak communities have used orangutan skulls for ceremonies or rituals, others have great respect for orangutans. In Kalimantan, there are 250 subgroups of Dayaks, so the practice varies greatly across Kalimantan. The variation in local communities demonstrates the complexity of developing education and awareness campaigns that are effective for local communities. In essence, the complexity of local communities in Sabah, Sarawak, Kalimantan, and Sumatra demonstrate that awareness and education programs for local communities should be tailored to fit the needs of the communities.

Furthermore, for general awareness, a sole focus on orangutans is very dangerous. Large groups of Indonesians do not care about orangutans, but do care about fertile soils that affect their crops. Large numbers of people are also a problem. The Indonesian government's transmigration policies have increased the number of people living in Kalimantan substantially. Conservation should be a key focus of awareness and education programs, including the orangutan as part of that project, but should not be limited solely to orangutans.

Law enforcement is yet another problem area. This is an incredibly complicated problem because of the involvement in illegal logging and animal trade by the army, police, and head of district offices. Thus, in a large way, changing attitude is essential to good law enforcement. Awareness, public pressure, and education may pressure local governments to pursue good law enforcement policies.

Tourism is a controversial subject because of the impacts that tourists have on wild and rehabilitant orangutan populations and habitat degradation, but also because of the positive educational value that can result from such experiences. Tourism for orangutan projects should be managed by conservation and environmental experts and should be very limited. For projects that already exist, management by orangutan and conservation experts is preferable than no participation by such experts at all. Local government, local people, and local NGOs should be involved in this process of developing sustainable and effective tourism.

In sum, it is essential that all levels are involved in the process. Indigenous communities to local transmigrant populations, to district level governments to the Indonesian national government and army, and finally to the international community all must be involved in the protection of orangutans and their habitat. The following scenarios outline realistic solutions to improving education, outreach, and public awareness for local communities.

Scenario 1: Lack of network or coordination among NGO and education programs

There are many environmental organizations and education programs already in existence throughout Indonesia and Malaysia to address the concerns mentioned above. However, most of these programs operate independently of other organizations, so little information and coordination exists to date.

Recommendations and Actions:

Compile a list of existing organizations that are engaged in environmental/orangutan education and awareness campaigns in Kalimantan, Sumatra, Sarawak, and Sabah. Programs elsewhere in Indonesia, Malaysia, and in Southeast Asia should be added to the list if there are additional contributions that would be useful to programs.

Develop *Forum Komunikasi untuk Pendidikan Konservasi Orangutan* that links all individuals working on conservation and orangutan issues in Indonesia and Malaysia. This network will put together an email mailing list for contacts in environmental education and awareness campaigns. Second, the network will have an annual meeting to discuss ways to coordination measures and development educational curriculum. Finally, the network will consult relevant education experts, DIKNAS, LSMs, and PHKA to develop an effective curriculum.

Implementation of *Forum Komunikasi untuk Pendidikan Konservasi Orangutan*:

Jeane Mandala, Coordinator (Wanariset Orangutan Reintroduction Project)

- Contact person in East Kalimantan: Jeane Mandala
- Contact person in West Kalimantan: Asep Mulyadi (Gunung Palung Orangutan Conservation Program)
- Contact persons in Central Kalimantan: Abdul Muin (Taman Nasional Tanjung Puting), Odom and Lone at Nyaru Menteng Reintroduction Center
- Contact persons in North Sumatra/Aceh: Pak Suherry (Yayasan Ekosistem Lestari - YEL), Pak Ambar, KSDA Sumatera Utara II
- Contact person in Malaysia: Azri Sawang (Kinabatangan Orangutan Conservation Project)

Resources needed: Money for yearly meeting, money for development of educational materials, money for training, new materials, development of facilities and other equipment

Time line: Immediately

Scenario 2: Understanding local communities. Based on experiences with environmental education and awareness in Flores and Siberut, it is important to understand the composition (demographic data: ethnic background, educational background, economic background, employment, size of family, how many people live in a particular community, etc.), needs, and existing awareness about conservation issues of local communities for a particular conservation area. To date, LSMs, government organizations, and orangutan protection groups have a general understanding of communities, but such knowledge could be improved by a more systematic approach to developing databases concerning local communities. However, such surveying must be done in the consultation of appropriate experts because of the sensitive nature of such work. [note: Large, professional surveys (called KAP surveys) on environmental awareness and knowledge have been conducted by the USAID funded EPIQ program.]

Recommendations and Actions:

First, organizations and conservation groups should consult local authorities including DIKNAS, the district office (kantor kecamatan/kabupaten), PHKA/KSDA, etc. and appropriate local authorities in Malaysia, to collect existing demographic information. Most demographic/socioeconomic information is collected and published for each district on an annual basis by the Department of Statistics (BPS), and is available in Jakarta.

If possible, organizations and conservation groups should conduct surveys with the consultation of experts trained in collecting such data and survey techniques for a reliable and applicable understanding of the composition of local communities. If no such consultation is available, it may be better to forego the survey part because of the sensitive nature of such community work. Guidelines for the ethical study of human participants should be followed. Organizations and conservation groups should be aware of the sensitivity of surveying and designing surveys, and should not develop them outside of expert assistance as described above.

When possible to conduct such surveys in consultation of appropriate experts, surveys should be developed in accordance with existing information on communities and with the assistance of local officials and experts. Such surveys should address non-existent demographic information, environmental awareness, community needs, and any other information needed for effective conservation programs following guidelines and survey techniques as developed by various experts in Indonesia, Malaysia, and internationally. Ideally, such surveys should be conducted before extensive environmental and conservation programs begin, but as there are already many existing programs, such surveys could still be conducted to generate more effective public awareness and education campaigns.

Implementation:

Guidelines for the ethical study of local communities in park areas will be developed to facilitate community research. Additionally, a collection of existing surveys will be collected and compiled for the use of interested organizations with appropriate training for surveying local communities.

People responsible for developing guidelines on community research: Stacey Sowards, Tamen Sitorus

Scenario 3: Development of new conservation education/awareness projects and support of local LSMs. While many orangutan and habitat conservation programs currently exist, there are still areas that have not yet developed awareness and education programs. Such areas should be targeted and encouraged to develop awareness and education programs for local communities. These might include research sites without supporting organizations, Nyaru Menteng Reintroduction Center, Taman Nasional Bukit Tiga Puluh, Taman Nasional Kutai, Taman Nasional Bukit Baka Bukit Raya, Taman Nasional Betung Karihun, Taman Nasional Kayan Mentarang, etc.

Recommendations and Actions:

Such projects should be evaluated through procedures outlined in Scenario 2 before proceeding to the development of entirely new projects. Communities and/or villages should also be prioritized, focusing on the communities with the greatest need for change or immediacy of the problems facing conservation areas.

The new forum, as suggested in Scenario 1, should also arrange to share information with interested parties for organizations and individuals who are interested in starting new conservation education and awareness programs. The purpose the forum is to facilitate information sharing, and should be available to interested parties.

Interested parties should also work with local LSMs to find out if LSMs are interested in developing or expanding existing awareness and education programs. Often, existing LSMs can work on education and awareness projects without the development of an entirely new organization, and should thus be consulted. For example, there are numerous LSMs that have education and awareness components, including the large NGSs such as Yayasan, WWF, CI, WCS and TNC. WALHI is a forum with a large awareness/advocacy component.

Existing organizations should develop portable materials such as an extension mobile unit so that traveling presentations can be made in unvisited areas and for follow up projects.

Implementation:

The new forum will be responsible for providing new materials to interested parties.

Existing organizations should develop portable materials to facilitate information sharing and outreach programs. This might include posters, stickers, books, and other educational materials, brochures, newsletters, and leaflets, as well as a mobile unit that might be used a portable exhibit in various communities.

Scenario 4: Training for teachers, LSMs, and members of local communities. In general, local communities and teachers lack knowledge and the proper training to teach about general conservation issues, orangutans, and habitats. Training should be offered by existing organizations with the proper knowledge and background.

Recommendations and Actions:

Consult and develop guidelines for teaching conservation materials. Many conservation experts have developed educational materials and teach about conservation now. Local Indonesian and Malaysian educational experts should be consulted to discuss teaching methods and materials to determine effective and culturally sensitive approaches to teaching about conservation in schools and local communities.

Training and workshops for teachers, LSMs, and other local community members. Because there is a general lack of awareness about conservation on the part of local teachers, organizations should work with local teachers and LSMs to develop effective environmental education programs.

LSM capacity building. Local LSMs are essential for effective public awareness and education, and therefore must be included in orangutan conservation efforts. Experienced projects can facilitate local LSM efforts through LSM training and mobilization.

Training for ecotourist guides. Our working group recognizes that ecotourism is a controversial issue, but also that ecotourism is inevitable. It is our feeling that in instances where ecotourism already exists, it is better that such projects are managed by experts. Therefore, our recommendation is that conservation organizations should engage in extensive training for ecotourist/forest guides to provide better management of such existing projects. [Note: government of Sarawak is looking into training schools that could help set up a guide course. Pers comm. Lardeux-Gilloux]

Conservation/Park officials. Training and seminars should also be offered for local officials and conservation officials as needed. Training and seminars should be provided by qualified conservation organizations in consultation with local officials.

Scenario 5: New facilities and materials. Environmental and orangutan protection organizations need more access to facilities and materials, as such access is often limited to self-design.

Recommendations and Actions:

Development of mobile units/traveling exhibitions for remote community outreach, development of new educational materials, development of educational centers, development of ecotourism facilities to provide a more educational experience for ecotourists and to manage ecotourists more effectively.

Implementation:

The new forum, as outlined in Scenario 1, should facilitate the exchange of educational materials.

Existing and new educational materials should be adapted to meet local communities' needs. International materials should receive special consideration for the appropriateness and adaptation of such materials in local communities.

A database of education literature should be developed so that various organizations can consult such literature in the design and implementation of education programs. Additionally, Indonesian and Malaysian educational experts should be consulted for the design and implementation of such programs in local communities. Finally, local authorities, such as DIKNAS, should be consulted for approval of materials.

The development of mobile units, exhibitions, and new educational materials should be developed in consultation of appropriate educational literature.

Scenario 6: Evaluation of programs. Reports concerning environmental education and awareness campaigns are reported to have various positive effects, yet little research and evaluation of existing projects have been implemented to evaluate how effective such programs are.

Recommendations and Actions:

Programs should use pre- and post-surveys to evaluate student and local communities' perceptions of environmental and conservation issues. Such surveys should follow the guidelines outlined in Scenario 2.

Programs should also have a follow-up component so that students and local communities are regularly engaged in conservation principles and ideas.

Implementation:

Each program should integrate the above recommendations into their program.

Scenario 7: Grant and proposal writing. Because all of the previously mentioned projects require funds for implementation, mechanisms for obtaining such funds must be addressed. Perhaps the single most important issue identified by participants in this working group who are currently active in education and public awareness campaigns is sheer lack of funds for implementation. Furthermore, although some money is available in Indonesia and Malaysia for such projects, funds from local communities and national governments are often short in supply. However, within the

international community, there are many organizations, governments, and individuals that are willing to donate money to such projects. Such grants and funds must be pursued to a greater extent.

Recommendations, Actions and Implementation:

The shortage of money in Indonesia and Malaysia means that we have to turn to the international community for support, but available money in Indonesian and Malaysia should be pursued.

1. International orangutan organizations should be consulted for funds and/or approaches in grant writing. Established organizations that may be able to assist include BOS-USA (and other BOS branches in Europe) and Orangutan Foundation International. A list should be compiled of all international organizations that could facilitate such awareness and education projects financially.
2. Each organization or project engaged in public education and awareness should outline needs and current situations to facilitate the grant writing process.
3. Representatives from various international organizations should be available to consult with local projects.
4. Researchers and international organizations should develop a list of available and pertinent grants that might include grants for environmental education, orangutan projects, and conservation education.
5. Training for grant proposal writing should be offered, if needed, to local communities in Indonesia and Malaysia to facilitate grants and proposals.

Contact people/people responsible for implementation:

- Dr. Stacey Sowards, to work with BOS-USA, Orangutan Foundation International, and California State University, San Bernardino to develop list of available education grants available in the U.S.
- Andy Blair, to work with OFI and the Great Ape Alliance to develop list of available education grants.
- Dr. Peter Collin/Dr. Klaus Schendel, to work with BOSF-Germany to develop list of available education and conservation grants.

Issue 2: National Education and Awareness in Indonesia and Malaysia

There is very little knowledge in the national public on the fate of the orangutan and of the eminent threat to its survival. A drastic change of the national attitude is required because of the imminent threat of vast environmental destruction and the prediction that if this continues the orangutan will disappear from the wild in ten to twenty years. A major effort to bring this into the national consciousness is required. Campaigns have taken place in other countries that brought critical issues of species conservation to the national consciousness of those countries. Consideration is needed as to how to accomplish this in Indonesia. Actions to inform and excite the public in connection with issues of nature conservation are urgently required.

Scenario 1: Grand scale TV and radio actions, which make use of Indonesian public figures, would be an effective means to accomplish this as a propaganda and a fund raising enterprise. [Note: WWF is already doing this, although not focused exclusively on orangutans.] A national awareness campaign was identified by the entire workshop as an extremely important tool in generating awareness about the plight of the orangutan, and should definitely be pursued aggressively. Some research in Kalimantan Barat suggests that television programs may not be the most effective, but rather information dissemination via radio programs, wedding parties, and dangdut music might be

the most effective and popular means of reaching rural communities (and maybe national communities as well). However, according to BPS statistics for East Kalimantan and Central Sulawesi, more people watch TV than listen to the radio. TVs with satellite dishes are often found even in extremely remote villages and are often the focus of community gatherings. It is obvious that all possible communication outlets should be engaged.

Recommendations: Arrange for Indonesian professional expertise in targeting a large grand scale public media campaign at the national level. In addition to approaching Indonesian experts on this various embassies and large international business companies should be approached to provide expert assistance in public relations campaigns. Further research should be conducted to determine the most effective medium for such campaigns. USAID is funding a national forest campaign beginning this fall. The Forestry Minister, Marzuki Usman, is about to launch a “no Forest, no Future” campaign.

Implementation: The new Forum outlined in Issue 1 might begin the implementation process, or contact people who have the expertise to execute such a national campaign.

Scenario 2: Actions, which allow children to become involved by expressing their concerns, might be particularly appropriate at the provincial or kecamatan level. An example of such an action would be a campaign in which children gather the signatures of their peers on a letter to be sent to provincial authorities.

Recommendations: Regional NGOs and orangutan experts should coordinate with media to develop informative programs to stimulate the involvement of local citizens particularly children. A nature/orangutan quiz program that begins with contests in local schools and ends with final contestants competing on regional television would be another means to attracting attention to the plight of the orangutan and informing the public.

Scenario 3: Lobbying of political and administrative leaders at the national, provincial and district level is needed to bring orangutan conservation on to the national political agenda. Even though relevant decisions may be taken at the local level, the plight of the orangutan should be made a matter of national concern.

Recommendation: Concerned persons with access to political and administrative officials develop recurring lobbying efforts to keep officials informed about the developing status of the orangutan and press for implementation and execution of laws and regulations. Both the national and provincial information institutes should be approached to bring to the issue of nature conservation by incorporating the case of the orangutan in their programs. However, the working group also recognizes the difficulty in implementing such a lobbying campaign in regard to the current political situation. Issues of decentralization must be considered in lobbying issues, perhaps focusing at the local or provincial level.

Scenario 4: A curriculum on the issues of environmental care needs to be developed for various age groups and entered into the national education syllabus.

Recommendations: Persons having expertise on orangutan conservation should coordinate to provide necessary information to be incorporated into education curriculum. There should be lobbying of the Ministry of National Education with support of the Ministry of Forestry to have these elements incorporated into the curriculum. This should be done in recognition that decentralization removes the central government’s power to create a national curriculum, but perhaps a curriculum can be

proposed for distribution from the national level to more localized levels so that all school districts have access to such educational materials.

Follow-up campaigns and activities on each of the above scenarios will be necessary to maintain public exposure to the issue.

Issue 3: International Education and Awareness

It is recognized that all local and national actions in Indonesia and Malaysia would benefit enormously in terms of expertise and finance from development of greater international support. Since the survival of the orangutan is a matter of concern of the whole of humanity its conservation should not be left solely to the responsibility of the Indonesian and Malaysian nations. On the contrary it is the responsibility of humankind. International resources should be tapped for support to assist the Indonesian and Malaysian nations in preserving the species.

Problem areas:

There is a lack of international knowledge of the problem faced by the orangutan as well as what an orangutan looks like and where it lives, although many organizations, zoos, and individuals are engaged in education and awareness campaigns.

Pet trade and logging often is initiated by people in foreign countries and there needs to be extensive information on these problems. Although CITES has enacted regulations to address the international trade of endangered species, hundreds of orangutans are still in captivity in Indonesia and the international community.

Many international NGOs are working on education and awareness campaigns, but unfortunately, coordination and cooperation could be improved. Everybody should work together to create a more united and effective international campaign.

There is an evident lack of funds in Indonesia to support local initiatives in education, which international organizations may be able to fund in part.

Finally, the target of such campaigns must be determined. Many organizations already exist in Europe, Australia, and North America who are working to address these very concerns. However, some evidence indicates that more campaigns are needed in East Asia to reduce the pet trade, increase funding, and general awareness. For example, there are currently campaigns to promote ecolabeling of wood products in Western countries. However, statistics indicate that approximately half of the wood coming out of Indonesian logging companies stays in Indonesia, and most of the rest of the wood goes to China, Japan, Taiwan, and other East Asian nations. As little as 2% is imported by Western countries. Such statistics indicate that more needs to be done in East Asian nations to generate awareness and implement boycotts and lobbying campaigns. It has also been suggested that Eastern Europe should become a target for such campaigns as well.

There seem to be two main purposes for garnering international support. The first is to raise funds for projects in Indonesia and Malaysia and the second is to decrease the demand for forest products and orangutans as pets. Awareness projects can generate interest for raising funds and reducing the illegal trade in orangutans. With that in mind, we have developed a few ways in which to address such concerns.

Scenario 1: Lack of international consumer and individual awareness. Within the international community, there is a general lack of awareness of the plight of the orangutan. Measures need to be taken to heighten awareness not only in the Western world (Europe, Australia, and North America), but also in Eastern Asia, particularly in Taiwan, China, Japan, and other countries that import Indonesian forest products and endangered species.

Recommendations and Actions:

1. A mass media campaign in the above mentioned nations and regions would be substantially beneficial in heightening international awareness. However, this is a huge undertaking. Existing efforts include: press, TV, film and documentaries, radio, websites, merchandising (such as t-shirts, books, postcards, food products, puppets, etc., to either raise awareness through messages and/or to generate revenue). Such efforts should be continued and expanded by various international organizations. Perhaps film and documentaries are the effective medium for such education and awareness campaigns.
2. Educational materials also have been developed by various international organizations. Most of these efforts have focused on children because they are a good target and can influence their parents. Zoo audiences also have been targeted. New educational programs should consult with existing organizations to acquire materials and ideas for programs. Teachers should also be included in this process so that they are able to teach units on forest conservation and environment, including a study of orangutans.
3. Furthermore, organizations should coordinate education and awareness campaigns in countries where multiple organizations already exist. Information sharing can facilitate such campaigns. For example, BOS-USA has developed an extensive educational package for school teachers. Similarly, other organizations also may have such materials to share with teachers and may be willing to conduct conservation seminars.
4. Existing international organizations also should facilitate efforts in East Asia where many pet orangutans and forestry products are imported. Orangutan Foundation International's project (from 1989 – 1994) in Taiwan has been useful in generating public awareness about the illegal pet trade (a particular problem since Taiwan is not a member of CITES even though they have established a Wildlife Act for endangered species). Such projects or branch organizations should be established in Japan, China, Malaysia, and other relevant nations.

Implementation:

Mass media campaigns and educational efforts should be continued and expanded. The critical issue for such campaigns is funding and time. Many journalists and documentaries have visited Indonesia to report on the plight of the orangutan, but one problem is that often audiences are not presented with any solutions. It would be helpful if journalists could be persuaded to provide contact information for audience members interested in helping organizational efforts. News programs and journalists should continue to be encouraged to discuss Indonesia's environmental degradation and plight of the orangutan (e.g., BBC and CNN for international coverage). Media organizations should also be encouraged to address exploitation issues of orangutan actors and the implications of the image orangutan actors create throughout the world (such as in Dunston Checks In and Babe: Pig In The City).

Many of these documentaries, news programs, and news articles should also be translated into other languages, particularly Indonesian/Malaysian so that they can be shown or printed in Indonesia, Malaysia, and other nations. Although translation is not a perfect option because of a difference in target audiences, translation of documentaries is relatively inexpensive in comparison to the cost of making new documentary programs. It could also be useful if international organizations could fund the translation of such documentaries when deemed appropriate for Indonesian audiences.

International organizations should develop working relationships with individuals in target countries without chapters or branches. Members of such organizations should organize coordination of information and materials. Educational materials and public awareness materials will be compiled to analyze what more can be included in such efforts and to provide an existing database of materials.
Contact people for database: Andy Antilla and Emmanuelle Grundmann

Scenario 2: Lack of political will on the international level. The recent passage of the Great Ape Conservation Act in the United States and designation of American funds for orangutan protection projects signify increasing international governmental attention to great apes and orangutans, but much more support is needed from international governmental organizations and governments. Furthermore, companies can be lobbied to boycott unsustainable forest products.

General recommendations:

Lobbying of political and administrative leaders in various countries and various international agencies must continue (e.g., United Nations, European Union). This can be done in countries outside of Indonesia and Malaysia as well as at international agency and governmental offices in Jakarta or Kuala Lumpur. Lobbying can also enlighten countries about the problems caused by the illegal trade of orangutans. Prosecution and development of protection laws are important in each country to address the illegality of orangutan trade.

More grant writing and proposals should be submitted to international donors to fund various local and national level initiatives that have previously been described. Additionally, many companies offer grants as part of a public relations campaign that should be considered as possible funding for projects. Many grants available for environment and conservation issues have not been tapped to the fullest extent for orangutan protection and conservation of habitat in Indonesia. Qualified and experienced experts are needed to submit proposals that will be accepted.

Although only a small amount of forest products from Indonesia go to Western nations, companies should be encouraged to use only sustainable forest products, particularly companies that sell wood products (such as hardware/home improvement stores).

Working group members: Jan van Hooff (interest in mobilizing public support), Jeane Mandala (Public Relations), Emma Grundmann (research at Wanariset), Andy Antilla (Woodland Park Zoo), Stacey Sowards (focus on local communities and orangutan conservation), Fred Bagley (past 6 years managing rhino and tiger conservation in Asia), Tamen Sitorus (20 years as Directorate General for Forest Protection and Nature Conservation, past three years at Tanjung Puting National Park in Central Kalimantan specializing in management of protected area, now in Jakarta with central government), Ambar Dwiyono (nature conservation, responsible for protection and nature areas/flora and fauna in North Sumatra, specializing in public awareness issues and local people), Azri Sawang (from Kinabatangan conservation project in Sabah, Malaysia, works with local communities for education programs and university programs), Andy Blair (focus on environmental awareness in Sumatra and ecotourism management in Bukit Lawang), Barb Shaw (interested in the mobilization of

grassroots as quickly and effectively as possible), Dwi Anugrah (LSM Lories, wildlife group in Samarinda, Kalimantan Timur), Asep Mulyadi (Gunung Palung Orangutan Conservation Program in Ketapang, Kalimantan Barat), Tatang Mitra Setia (involved in organization to work for conservation and environmental education), Klaus Schendel (vice-president, BOSF in Berlin, Germany).

Details of Some Existing Educational and Public Awareness Projects in Borneo and Sumatra

Name of Project:

Yayasan Orangutan Indonesia
Location: Taman Nasional Tanjung Puting, Pangkalan Bun, Central Kalimantan
Funded by Orangutan Foundation International
Contact person: Pak Zaqie
Pasir Panjang Permai Blok A, No 11
Pangkalan Bun, 74112, Kalimantan Tengah
Tel./Fax: (0532) 24030
handphone: 0812-500-2669 (di Pangkalan Bun);
handphone: 0816-188-5377 (di luar Pangkalan Bun)

Goals and objectives:

To save tropical forest and orangutans in Kotawaringin Barat and around Central Kalimantan

Program strategy and planning:

Radio programming

Visiting kindergarten, elementary, junior high, and high schools – 2 hours in the classroom to teach about the Tanjung Puting National Park, there is a questionnaire to understand environmental awareness, sometimes field trips to see and understand animals that live in forest areas, there are homework projects: students make a story about the forest and orangutans, and can win a T-shirt or orangutan statue.

Visiting palm oil plantations, to educate palm oil workers to call for relocation of orangutans

Working at the Kabupaten level with exhibitions, to inform government about park, every year in August and October

Visiting villages around the forest environmental education, traditional ceremonies

Audience (s):

Schools, nature lovers, local communities, local government

Existing evaluation of project/Plans of evaluation of effectiveness:

In the Kitawaringan Barat area and Kabupaten level awareness, especially about the orangutan and forest is at a higher level now (based on informal observations and talking with local communities)

Frequency of programs:

Every Saturday, we go to elementary school, palm oil plantation, high school, and the forest with various people

Materials used:

Slide programs, Film, Drawings and other materials

Other cooperating/involved groups (park officials, schools, local officials, NGOs):

OFI

Tamen Siturus, teacher

Balai Taman Nasional Tanjung Puting

Guidelines/Suggestions for others:

Need funding to reach and continue in remote areas, need more equipment and materials.

Name of Project:

Wanariset Orangutan Reintroduction Project-Extension Education Program
Jl. Soekarno Hatta, KM 38
Samboja, Kalimantan Timur
Tel: (0542) 410-365, 413-069, 415-808
Fax: (0542) 410-365, 415-808
Email: boswan@indo.net.id
Website: www.redcube.nl/bos

Goals and objectives:

To educate people at all levels about how important the orangutan is in the forest so that people will respect orangutans as part of the forest, and most importantly, as a part of us.

Program strategy and planning:

At our education center:

1. We invite schools to come (on Wednesday) to the viewing platform and educational seminar
2. Schools can also come on any day by special request

Public campaigns:

Maintain relations with newspaper journalists to enlarge our awareness program on conservation and orangutans.

Other activities:

1. Rescue and confiscation of orangutans
2. Traveling educational campaign, targeted to local people who live near wild populations of orangutans.

Materials used:

Educational materials such as booklets, leaflets, posters, coloring books, comic about orangutan which is written in 2 languages, English and Indonesian, a spotlight on the homepage, and songs

Name of Project:

Gunung Palung Orangutan Conservation Program
Jl. K.H. Akmad Dahlan, No. 10
Kelurahan Kauman
P. O. Box 144
Ketapang, Kalimantan Barat
78801 Indonesia
Phone: (0534) 31534

Contact person: Asep Mulyadi; Email: asepz@yahoo.com
Contact person: Betsy Yaap; Email: betsyyaap@prodigy.net

Goals and objectives:

1. To educate, build awareness, and build capacity with local community members, community and student groups, and government staff to protect the Gunung Palung national park from illegal logging and hunting.
2. Provide active protection of the Cabang Panti Research Station and Education Site.
3. Instill an orangutan confiscation program in Kabupaten Ketapang that will slow the illegal capture and trade of orangutans.

Program strategy and planning:

1. Education, awareness and capacity building: In general, local communities are not aware of the uniqueness of their surrounding natural environment. Environmental education can thus be very effective. The project includes:
 - I. Student/teacher field trips to the National Park (including capacity building of the Cabang Panti research assistants and National Park employees)
 - II. Visits to local schools for lectures to share information about the National Park areas and orangutans, based on continual research in the Park. Students are encourage to develop their own groups (e.g., students have formed their own Nature Lover's Clubs), and GPOCP supports students' efforts.
 - III. An environmental education center has been proposed for development on the beach area near the National Park area because many local people visit this beach.
 - IV. Teacher workshops in collaboration with another local NGO are being conducted to promote environmental education and give teachers an opportunity to visit the park area.
 - V. Awareness/Pride campaign and distribution of information is being launched this year to instill pride and education people about the National Park area. Local communities around the park area are being targeted.
2. Capacity building of local community members, community and student groups, and government staff.
Conservation training sessions are being conducted for capacity building with local communities, NGOs, and government.

Audience (s):

Local communities: high school students, NGOs, other members of local communities

Existing evaluation of project/Plans of evaluation of effectiveness:

Questionnaires are passed out before and after training and lecture sessions to evaluate how much students know and have learned from presentations.
Records are kept to determine effectiveness of ranger patrols.

Surveys of illegal logging activities are being conducted to measure effectiveness of the programs. Captive orangutan data are collected from month to month to evaluate the effectiveness of orangutan confiscation (also measured by breaks into the illegal trade market as a mark of success).

Materials used:

Lectures, books, slides, photographs, maps, handouts.

Other cooperating/involved groups (park officials, schools, local officials, NGOs):

Unit Taman Nasional

Name of Project/Contact Information:

Kinabatangan Orangutan Conservation Project
P. O. Box 3109
Sandakan 90734
Sabah, Malaysia
Tel/Fax: 089-230-220
Email: hutan1@tm.net.my

Contact person: Azri bin Sawang
Email: Riesaws@hotmail.com

Project directors: Dr. Isabelle Lackman Ancrenaz and Dr. Marc Ancrenaz

Funding from U.S. Zoos, National Geographic, WWF

Goals and objectives:

Eco-ethological research on orangutans in degraded habitat
Orangutan population management
Local capacity building
Education and awareness campaigns
Sustainable community development
Involvement of local communities, community management

Program strategy and planning:

Staff: 25 –30 people from village

1. Organize series of village meetings (various people from communities) to discuss many different issues for wildlife conservation (under ministry of tourism, science)
2. Try to gather all problems (and possible solutions) related to wildlife
3. Education programs: with local schools (in coordination with wildlife dept.), activities in classroom, field trips to research station (120 kids, 30 teachers have already come), puppet shows, games, songs
4. Community surveys to find out perceptions of wildlife and orangutans (most people are afraid of orangutans)
5. Community Development:
 - Local employment and training
 - Community based initiatives to develop nature and cultural tourism
 - Handicraft project by village women
 - Pilot development integrating agricultural development and orangutan conflict
6. Community participation in the management of natural resources:
 - The wildlife warden project (selection of 100 people for training project)
 - Law enforcement
 - Wildlife conflict mitigation
 - Inventories and monitoring
 - Habitat and wildlife population management
 - Education and awareness programs
 - Orangutan tourism
7. Training for village members: Try to incorporate from other villages, so that they can go back to their communities and teach their community members

8. Training for research
9. Work with Malaysian NGO to participate in wildlife management, discussion of hunting, traditional approaches
10. Assisting all types of development projects that are compatible with conservation. One project for women being set up in a village. Homestay project with minister of tourism.

Audience (s):

Population in local area, village heads, children, women, adults, district level/office to get them involved for the whole district, and state level government.
20 tribes in river area, but relatively stable for past 100 years.

Existing evaluation of project/Plans of evaluation of effectiveness:

Nothing systematic so far, but we can see a shift in mentalities in three years, big difference from up river attitudes.

Frequency of programs (everyday, every week, every month? For how long?)

Continuous project: research, education, and other activities every day

Materials used:

From the Columbus Zoo: maps, plaster replicas of orangutans skulls, booklets, coloring books, T-shirts, puppets
Still need brochures, and other educational materials

Other cooperating/involved groups (park officials, schools, local officials, NGOs):

Local capacity building with:

- KOCP local research assistants
- Sabah Wildlife Department
- Sabah Forestry Department

University Malaysia Sabah

Education, fisheries, and veterinary departments

NGOs in Sabah, WWF (has a project in same area)

Malaysian NGOs

Suggestions:

Support from state level government is very important

Name of Project/Contact Information:

Biological and Conservation Program
Department of Biology, National University, Jakarta
Contact person: Tatang Mitra Setia
Email: fabiona@link.net.id

Program I.

Biological Field Study

Goals and objectives:

Goals: Meningkatkan pengetahuan biologi; khususnya untuk penerapannya dalam kepentingan manusia antara lain untuk upaya konservasi.

Objectives: Menambah pengetahuan dan wawasan

- I. mengetahui dan mengerti metoda penelitian
- II. mengetahui dan mengerti bagaimana permasalahan lingkungan yang ada di lapangan dan melatih untuk tahu mengatasinya
- III. setelah tamat bisa dilaksanakan

Output: Human resources yang mengerti dan dapat mendukung upaya konservasi di masa mendatang.

Program strategy and planning:

- I. Survey lokasi untuk identifikasi: kondisi local (fauna, flora, dan masyarakat)
- II. Memberi material: Film, slide, buku, metode, alat peraga
- III. Observasi, diskusi, report, presentasi, publikasi

Strengths: Respons positif dari murid dan lembaga yang terlibat

Cooperating with local government

Audience (s):

Mahasiswa

Existing evaluation of project/Plans of evaluation of effectiveness:

Hubungan positif di antara mahasiswa yang terlibat dalam konservasi penyu

- I. Supervisi program ke Kelompok Ilmiah Remaja (KIR)
 - A. Penguatan pengetahuan konservasi kepada kelompok ilmiah/kelompok extracurricular di SMA/SMP dan guru.
 - B. Pembentukan kader konservasi
- II. Meningkatkan pengetahuan guru konservasi.
 - A. Terbentuknya kader konservasi di setiap sekolah atau di kelompok masyarakat dan ada module-module untuk guru.
 - B.
 1. Mendatangi sekolah
 2. Pameran

- III. Mengundang sekolah ke laboratorium Fakultas Biologi UNAS Jakarta
- IV. Training dan workshop
- V. Mengajak/trip ke lapangan
- VI. Materi, brosur, film/slide, alat peraga, post card, poster.
 - A. Didukung oleh sekolah, oleh staff pengajar universitas
 - B. Padatnya waktu belajar di SMP/SMA
 - C. NGO, PHKA dan Depdiknas
 - D. Siswa dan guru

Jumlah sekolah bertambah dan ada yang meminta berulang kali

- VII. Penguasaan konservasi untuk masyarakat local
 - A. Memperkuat pengetahuan konservasi untuk masyarakat lokal sekitar taman nasional
 - B. Pengetahuan pemimpin lokal, guru, anak sekolah
 - C. Adanya dukungan dari masyarakat lokal terhadap konservasi.
 - D. Pertemuan dengan pemimpin masyarakat desa (kepala desa)
 - 1. Ceramah di balai desa, mesjid, sekolah dan pada perayaan khusus di tingkat desa
 - 2. Informal meeting dan lobby di kantor pemerintah di tingkat desa dan kabupaten
 - E. Ada dana, tenaga ahli dan kerjasama
 - F. Kondisi politik di beberapa tempat di propinsi
 - G. PHKA, LIPI, Utrecht University
 - H. Dosen yang melakukan penelitian lapangan sudah dilakukan pada orangutan di Pusat riset Ketambe, TN Gunung Leuser.

Name of Project:

Kalaweit Program
Taman Nasional Bukit Baka Bukit Raya
Kalimantan Tengah
Contact person: Mr. Chanee
Tel: 0816-280770
Email: kalaweit@hotmail.com
Website: www.kalaweit.org

Source(s) of funding: The Gibbon Foundation, private donor (France)

Goals and objectives:

1. To educate local communities so that they do not buy and keep gibbons as pets
2. To return gibbons to original habitat

Program strategy and planning:

Information programs (public service announcements and talkshows) via radio throughout Kalimantan

Audience (s):

15-25 year olds (who listen to the radio program) in Balikpapan, Palangkaraya, Pontianak, Banjarmasin

Existing evaluation of project/Plans of evaluation of effectiveness:

Supporting evidence of statistics of radio listeners for this particular program (every year)
Radio has been determined one of the most effective ways for awareness campaigns

Strengths of project:

Radio programs are much cheaper than television programs and are more effective

Weaknesses of project:

Radio programs only reach young people, rather than older audiences

Frequency of programs (everyday, every week, every month? For how long?):

Commercials/public service announcements (everyday)
Talk shows

Materials used:

Radio programs

Other cooperating/involved groups (park officials, schools, local officials, NGOs):

KSDA

Suggestions for others:

Coordinate between gibbon and orangutan programs

Name of Project:

Studio Konservasi Alam Yayasan Lories, Samarinda, East Kalimantan
Institute for Nature Conservation – Lories Foundation
Ir. Nunuk Kasyanto (Executive Director)
Dwi Anugrah (Administrative and Finance Manager)
Jl. Gatot Subroto I, Gg. 16, No. 19
Samarinda, Kalimantan Timur Indonesia
Telp: (0541) 750-823
Email: ska_lories@smd.mega.net.id

Yayasan Bina Manusia Dan Lingkungan
Jl. Hendriawan Sie Rt. 66, No. 49
Gn. Sari Ilir, Balikpapan
Kalimantan Timur – Indonesia
Tel: (0542) 730-623
Email: ybmlbpp@indo.net.id

Goals and objectives:

To protect Sungai Wain habitat in East Kalimantan
Environmental education

Strategies and planning:

Explain the value of the Sungai Wain area
Explain the history behind the Sungai Wain
Explain the value of education and ecotourism
Emphasize the importance of biodiversity
Outline the threats to Sungai Wain
Environmental education in Samarinda and Balikpapan, East Kalimantan:
Theater groups for high schools
Songs, books, leaflets, and coloring books for elementary schools

Name of Project:

Sumatran Orangutan Conservation Program
C/O Suherry Aprianto
Yayasan Ekosistem Lestari
YP. Sultan Iskandar Muda
Jl. Tenku Amir Hamzah, Lingk. XI
Pekan Sunggal
Medan 20128
Sumatra Utara, Indonesia
Tel/Fax: (061) 845-7033
Email: sorp@indo.net.id
Website: www.sumatranorangutan.com

Goals and objectives:

- To replace the outdated and run down rehabilitation center at Bohorok, North Sumatra with a professionally run programme that meets both national and international standards.
- To assist with the development of a more acceptable tourism programme at Bukit Lawang so that the community continues to benefit from tourism. The existing center will be transformed into an 'orangutan viewing centre' that will continue to attract visitors.
- A comprehensive outreach and public awareness programme that will publicise the plight of the orangutan and provide much needed environmental education. This includes:
 - A PPLH environment centre
 - Training for teachers and guides
 - Development of handicraft and agro culture
 - School programmes
 - Environmental modules
 - Excursion trips
- To provide a means of employment and a source of revenue to the communities in the areas near the facilities.

Name of Project:

Gunung Palung Orangutan Conservation Program
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Phone: (0534) 31534

Environmental Education Coordinator: Asep Mulyadi
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Program Manager: Betsy (Yaap) Hill
Email: betsyyaap@prodigy.net
Director: [Dr. Cheryl Knott](#)
Email: Knott@fas.harvard.edu

Goals and objectives:

1. To educate, build awareness, and build capacity of local community members, community and student groups, and government staff to protect the Gunung Palung National Park from illegal logging and hunting.
2. To support active protection of the Cabang Panti Research Station and Education Site.
3. To help develop and implement an orangutan confiscation program in Kabupaten Ketapang that will slow the illegal capture and trade of orangutans.

Program strategy and planning:

A. Environmental Awareness and Education Program: The schools and communities surrounding GPNP in West Kalimantan have had little exposure to basic environmental information. In general, local communities are not aware of the uniqueness of their surrounding natural environment. Environmental education can thus be very effective. The project includes:

1. Student/teacher field trips to the National Park (including capacity building of the Cabang Panti research assistants and National Park employees)
2. Visits to local schools for lectures to share information about the National Park and orangutans, based on continual research in the Park. Students are encouraged to develop their own groups (e.g., students have formed their own Nature Lover's Clubs), and GPOCP supports students' efforts.
3. An environmental education center is planned for development on the beach area near the National Park area because many local people visit this beach.
4. Teacher workshops in collaboration with another local NGO are being conducted to promote environmental education and give teachers an opportunity to visit the park area.
5. Awareness/Pride campaign and distribution of information is being launched this year to instill pride and educate people about the National Park area. Local communities around the park area are being targeted. Billboards promoting rain forest and orangutan conservation in Gunung Palung National Park have been installed.

6. A radio program has been initiated to disseminate information on orangutan conservation and answer questions from the public.

B. Capacity building of local community members, community and student groups, and government staff.

1. Conservation training sessions are being conducted for capacity building with local communities, NGOs, and government employees.
2. Gunung Palung Orangutan Conservation Conference: As a follow-up to these training sessions and activities undertaken by the NGO's we will hold a second two-day Gunung Palung Orangutan Conservation Conference.

C. Support Active Protection of the Cabang Panti Research Station/Education Site

The program assists with the protection of the Cabang Panti Research Station by providing ongoing funding for patrols and staffing of National Park rangers and forest police.

D. Development and Implementation of an Orangutan Confiscation and Relocation Program in Kabupaten Ketapang

Working together with the local KSDA (Natural Resource Protection) office and the Wanariset orangutan rehabilitation center, we are developing an orangutan monitoring and confiscation program to offset the illegal trade in this endangered ape. We started the program this year and have received enthusiastic agreement on joint participation by both KSDA and Wanariset. Temporary holding facilities are now being constructed.

Audience(s):

Local communities: high school students, teachers, NGOs, government officials and other members of local communities

Existing evaluation of project/Plans of evaluation of effectiveness:

1. Questionnaires are passed out before and after training and lecture sessions to evaluate how much students know and have learned from presentations.
2. Records are kept to determine effectiveness of ranger patrols.
3. Surveys of illegal logging activities are being conducted to measure effectiveness of the programs.
4. Captive orangutan data are collected from month to month to evaluate the effectiveness of orangutan confiscation (also measured by breaks into the illegal trade market as a mark of success).

Materials used:

Lectures, books, slides, photographs, maps, handouts, flip charts, workbooks, public displays, billboards

Other cooperating/involved groups (park officials, schools, local officials, NGOs):

Unit Taman Nasional Gunung Palung, LTFE, Cassia Lestari, KSDA Pontianak, Wanariset Orangutan Rehabilitation Center

International Organizations/Contacts for Environmental Education and Awareness

Orangutan Foundation International

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Sumatran Orangutan Society: www.orangutans-sos.org

Great Apes Alliance: www.4apes.com

Orangutan Network: www.orangutannetwork.net

BOSF Germany (and other branches, including Australia, the Netherlands, and others, check website for BOS-USA or BOSF for contact information)

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Orangutan Reintroduction and Protection Workshop

15-18 June 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan,
Indonesia



FINAL REPORT

Appendix I Dissenting Opinion Piece

Tree Spiking: A Rebuttal Argument

Carey Yeager, Ph.D.

Some local NGOs, Indonesian government officials, and conference participants have proposed adoption of the tactic of tree-spiking as an approach to combat illegal logging in Indonesia. The underlying rationale given for the use of this tactic is that it has been used in the U.S. with some success and few injuries. A careful examination of the tactic and its impact in the U.S., as compared to its potential impact in Indonesia, indicate that there is great potential for harm to both individuals and to Indonesian society.

The practice of tree spiking was started in the 1970's by extremist environmental groups in the U.S. in an effort to stop primarily *legal* logging. In Indonesia, the situation is quite different from the U.S. The cessation of *illegal* logging in parks, nature reserves, and watershed protection areas is the primary aim. Below is a description of the tactic as practiced in the U.S.

Aim	Stop legal logging
Locale	Specific concession area
Target	Single corporation operating legally at site
Legality of tree spiking	Illegal
Penalty for tree spiking	Ranges from fines to several years in jail. Congress is currently debating making it a federal crime punishable by up to 10 years in jail.
Practice	Trees in concession are spiked, and both the targeted corporation and the press are notified
Impact on corporation	Corporation stops their employees from logging in the area until the area is cleared of spikes. Metal detectors and portable x-ray machines are used to remove spikes. Costs time and money but does not stop logging.
Impact on loggers	Little, apart from aggravation, as they continue to be paid. The risk of uninformed loggers is almost nil.
Number of serious injuries reported	Few
Potential damage	Chainsaw and machinery blades and belts may break and severely maim or kill workers. Chainsaw blades rotate at 13000 RPMs. Blades that hit a nail may explode like a grenade.
Time Frame for Potential Damage	Until the spike is removed or the tree dies and decomposes (up to hundreds of years)
Collateral impacts	Sometimes builds public support for the cessation of logging. In the NW Pacific area, the activity has pushed the local public against environmental efforts.
Alternatives to Spiking	Arrest tree spikers. Engage in legal protests. Lobby local government to change zoning regulations.

In Indonesia, tree-spiking's primary target would end up being loggers (as opposed to corporations as in the U.S.). The loggers generally work in small independent groups, often obtaining advances from middlemen, to whom they sell their logs. Logs may also be sold directly to numerous sawmills, or the loggers may process the logs themselves and sell the planks. Loggers may be from the local communities or may be economic migrants from other areas.

Tree spiking poses definite risk to the loggers. A chainsaw blade rotates at 13,000 rpms. The impact of the blade striking a nail will most likely break the blade and / or the chain, with the components exploding outwards. Loggers could easily be maimed or killed by the impact of a chainsaw blade or chain. The same applies to sawmills.

Trees are also negatively affected by spiking. Small "ring" nails (~3 cm long) can cause large wounds in some tree species. For example, *Ganua motleyana* develops large gaps in the bark and cambium (up to 30 cm in length) in response to the affixing of tree tags using small nails. Any opening of the protective bark and cambium layer poses an opportunity for infection by insects, bacteria, or fungus.

In the Indonesian context, it is doubtful that all loggers in an area would be notified of the presence of the spikes, given that the danger remains as long as the spike is present in the tree (trees may live up to several hundred years), loggers are not coordinated in a hierarchical system (unlike the U.S.), and Indonesia has experienced numerous internal migrations (migrants would be less likely to be tied into internal communication networks). As loggers will not receive wages if they do not cut trees, even notified loggers may continue to work in an area despite the danger. Witness the numerous individuals in Indonesia who continue to work in extremely dangerous illegal mining, despite the ever-present danger of landslides, cave-ins, and direct harm to their health from the handling of mercury.

If loggers or sawmill operators are harmed, there is a significant likelihood of violent repercussions against perceived supporters of spiking. Indonesian loggers have burned down park headquarters, and beaten up rangers and student groups that have attempted to stop illegal logging. Loggers have also shut down numerous field stations that were perceived to be an obstacle to their activity. It is highly likely that individuals or organizations working on environmental issues in the area would be targeted, if tree spiking practices were implemented.

Tree spiking may also turn public sentiment against conservation efforts in an area if individuals are harmed or killed. This may occur even if there is no serious injury (as has happened in the Pacific NW of the U.S.). Loss of public support for conservation in an area could have a far-reaching negative environmental impact, not only on forests, but also on other environmental issues.

The majority of local NGOs and governments agree that the brunt of the enforcement should be directed towards the "big bosses", not the loggers. In fact, this is generally the rationale given for not prosecuting most illegal loggers that are caught. There are a number of alternatives to tree spiking that would be at least as effective at stopping the illegal logging, and would have pose lower risks to the loggers. These alternatives include:

- Directly enforcing existing laws
- Closing down sawmills which do not have proper permits
- Closing down sawmills accepting illegal timber
- Destroying confiscated logs, and
- Controlling chokepoints (roads and rivers).

Orangutan Reintroduction and Protection Workshop

15-18 June 2001

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FINAL REPORT

Appendix II Gibbon Foundation Challenge

The Gibbon Foundation Challenge

The Gibbon Foundation offers a Prize of USD 10,000.- for the person or institution who proposes a method to devalue tropical timber in protected forest areas in such a way that the potential felling of the trees does not entail any risks bodily harm to people.

The Prize will be awarded by a committee of experts that will evaluate the proposed solutions according to the following criteria:

- The method should be easily applicable at an acceptable cost in terms of money and time.
- The method must not be harmful to the environment and the effects must be ecologically acceptable.
- The method must be described in sufficient detail, with an appropriate cost-effect analysis; scientific evidence must be provided to show that the method is effective and that the specified risks are acceptable.

The deadline for entering a solution is December 31, 2001. Please send your proposal to the Secretary of the Committee:

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Orangutan Reintroduction and Protection Workshop

15-18 June 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan,
Indonesia



FINAL REPORT

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¹ Release sites are sites in which previously captive orangutans have been released. Halfway houses are areas in which orangutans are being prepared for return to the wild (in so-called soft releases), and are therefore not permanent homes for the animals. *Release sites* legally are in areas without existing orangutan populations, unless there is overriding reason to introduce animals into existing populations that are well below carrying capacity and the reason for this can be addressed in the introduction project (e.g. if hunting is responsible we must create secure situation from hunting). The legal status of the release sites should be strong enough to provide some protection; in practice, this often means upgrading the official protection status.

Orangutan Reintroduction and Protection Workshop

15-18 June 2001

Wanariset-Samboja and Balikpapan, E. Kalimantan,
Indonesia



FINAL REPORT

Appendix IV Workshop Goals and Issues

Workshop Goals and Issues

At the start of the workshop, each participant was asked to answer the following questions:

- 1) What is your personal goal for this workshop?, and
- 2) What do you feel is the most significant issue affecting conservation of the orangutan?

The responses to these questions are listed below.

Goals	Issues
Develop implement able action plans for orangutan conservation	How to curb commercially driven orangutan habitat destruction
Current plight of orangutan and want to put self in conservation	Conservation of Orangutan
Increase personal knowledge as well as the role of behavior and cognition in rehabilitation and reintroduction	Loss of habitat
Contribute about situation in Sabah (Malaysia)	Orangutan conservation and survival in secondary forest
Implementation of results	Law enforcement implementation and actions
Learning and cognition abilities of orangutans	Education of conservation local population and international community for cons and habitat use plan
How people outside Indonesia can help with orangutans and conservation	Law enforcement and protection of habitat
Environmental education, working plan of local people conservation projects	Local communities and Indonesian involvement
Identification of areas protect able and re-introduction to area where no wild populations are found	Implementation of protection, examination of long term implementation, law enforcement issue, protection of area, new legal methods for protect area
Take action immediately for habitat restoration	Law enforcement for habitat destruction
Recommendation for standard procedures for reintroduction and projects	Loss of original habitat
Guideline to conserve orangutan in changing political and economic situation	Habitat loss and illegal logging forest encroachment and fire and politics Up value of orangutan to support human environment
Share knowledge and idea and best methods and further action	Habitat protection and local gov How law enforcement take action
Current knowledge of medical problems of orangutans and how to solve them	Standard formula for medical aspects for ex-captive orangutan
Improve political possibilities as well as get information on what is to be done besides funding both inside and outside of Indonesia. What can be done on scientific and political positions to help change?	Use value of orangutan Long term ecotourism Food and habitat
New method for environmental education awareness campaign	Increase habitat and education
Make agreement of solutions	Habitat and illegal logging
Concrete plan with actual action	Development of local gov support for forest support
Laterality studies are my background and I would like to see how cognition and behavior fit with orangutan conservation as well as share all information.	Protect habitat with local gov and local areas Find suitable areas

Reduction in rate of habitat destruction via non-effective law enforcement and better education of local communities in and around forest areas. Conservation strategy for Sumatra	Corruption, lack law enforcement and general anarchy and lack of local people doing protection
Increase support reintroduction center target habitat protection	How to make direct links from centers to initiative of habitat protection and new reintroduction sites
Recommendation for orangutan with action and habitat protection	Rehabilitation of Tanjung Puting many habitats need conservation both protected area and other
Improve knowledge of conservation	Make action plan for politics Law enforcement in habitat loss
	Habitat loss and illegal logging
Share information to solve future problem	Law enforcement and implementation Habitat fragmentation and illegal logging
Create real action	Social Behavior and habitat fragmentation
Initial government issues	Stop illegal logging
Social ecology common message of study of orangutan. Bring attention to illegal logging and consequent degradation of deep peat ecosystem through drainage channel	Confrontation of government about in action over illegal logging
Protection and conservation of wild orangutans	Recommendation to promote conservation to countries who accept illegally import orangutans Native habitat conservation Push local gov to protect orangutan and promote conservation
DNA analysis of orangutan	Protect forest under current political situation
Orangutan conservation	Habitat loss Legal budget for conservation
Decrease number of animals coming into rehab center	Decrease number of orangutan coming in New release habitat
Ways to conserve all Indonesian primates and habitats and pass along to members of Indonesia Primate Society	Timber extraction Conservation methods for conservation and raise awareness
Drastic improvement in protection efficiency	Overall lack of commitment and understanding from Indonesian government and people Why orangutan important and conservation important International funding agencies need to demand positive result need more business like approach
Commitment and recommendation and experience and support from all and real action for wild habitat	Loss of habitat and lack of law enforcement and no choice for local people Programs for local people to save local forest and alternative income
Share information about conservation in Sumatra	Increase awareness of conservation and orangutan; education of local people
Realistic policy for issues	Conservation and reintroduction not viable solution need suitable habitat and viable population
Meet people actively involved in conservation and encourage proposal for funding	Strengthening of local gov to carry out law of illegal logging and taking young
Save viable protected population, cultural and ecological diversity	Establish and enact long term research site

People work together share experience and information	Lack of education of lower and high levels and continued corruption in Indonesia
Values of orangutan conservation and habitat conservation	Stop illegal logging and suitable release site
Obtain information of other conservation sites and models and include other species like gibbons	Illegal logging in nation park and conversion to oil palm plantation
Make plan to protect a non protected areas as well as protected areas Another goal is to implement protection based on immediate crisis	Illegal logging and measure to curb it and regeneration after logging
Learn from field people and exchange ideas and preserve wild pop	Adaptation to new gov with out the loss of progress
Written documentation for protection Work with local pop	Habitat loss and palm plantation and gold mining
Include area in forthcoming action plans get illegal logging out and restoration	Illegal logging stop and restoration begin Get more areas protected
Educational programs, community organizing, how best to mobilize people	Habitat destruction Immediacy of action
Solution for recommendation during political crisis Action for long run with stable gov	Want to see less reintroduction and better in situ conservation; Channel funds to appropriate conservation in situ Research station to stop illegal logging in critical habitat
Vision of all orangutan live wild and protected Cooperation and support of all sites	Habitat protection
Share information and hope one day rehab not necessary	Standard for all reintroduction sties Reduce mortality Release more orangutans and increase survivability Law enforcement Habitat loss Implementation of recent research finding Alternative income to local pop Use of vaccines ethical used and extent
Develop common goals for all sites	Implementation of conservation recommendation lack of political will need to implement already existing laws on paper Local people income and viability
More attention paid to underlying causes	Underlying causes and current economic policy Forest degradation
Conserve wild population	Demand side of illegal logging placing more trees on endangered lists or black lists
Outline implement able goals already in place since PHVA	Law enforcement Awareness and implementation programs Detection and confiscation programs for orangutans Awareness program for pride of orangutan and financial benefit of orangutan
Share of ideas	Protection of Orangutan habitat
Con tribute to orangutan conservation plan and get information from all here and take back to Sarawak	Lack of support of gov and security forces
Learn more about procedure of habitat suitability	Loss of habitat

	Problem of identification of suitable areas for all primates
Improve knowledge and share information	
Share and understand loss of habitat and illegal logging	Stop illegal logging Local community empowerment to conserve orangutan Local community protect forest
Share information	Work for real action plan Habitat loss
Share ideas from Africa to Indonesia look at health monitoring problems across all areas to monitor changes in health to identify changes in environment and local encroachment; Long-term measure for conservation efforts. As a tool to measure damage and impact so can be integrated in research programs of wild and reintroduction	Value of Orangutan for local people Monitor orangutan health issues as measure of conservation Direct value or benefit to local people
Meet with field people to exchange field work and rehab center and medical problem	Destruction of habitat Local community involvement
Formal coalition from all organization to share knowledge	Habitat protection Habitat fragmentation and long term viability
Prevent extinction of orangutan Relay her cynicism and do actual work not just on paper	What to do with 550 orangutans in care of centers? Habitat loss no where to put release orangutans
Progress for future of orangutan	Illegal logging Income for local people and local gov work together with all organization
Political problem in Indonesia all experts will work together to solve program	Forest destruction Work together Political problems
Share information and experience Make protocol for orangutan reintroduction	Habitat protection People education Involve more Indonesian people to protect their own forest work together with western
People to actually get together in a concerted and cooperative way that gets measurable results and to confront the real problems in the real world that have resulted in the dissemination of orangutan habitat, primary tropical forest. We must also look at the underlying issues	Lack of law enforcement and lack of political will Economic equity and poverty in areas or orangutan Lack of law enforcement and political will Global economy and western pop culture effecting traditional life way of people Measurable results and solutions Habitat destruction and fragmentation Diverse geographical mixing orangutans making Creole of orangutan culture and genetics
Solid guide line and procedures for reintroduction	Law enforcement Habitat loss
Positive and workable action for conservation in habitat loss in national park	Inability of Indonesian to do any thing about habitat loss and implementation
Militant ways of protecting orangutans and other great apes want to see more than talk and will preserve these animals. Funding programs, which offer militant protection to these primates.	Stop high level corruption which seems endemic to the granting of logging concession in Indonesia detailed in documents like Telepak Indonesia "The final cut"

Share information to find best action to solve all problem in orangutan	Habitat loss and lack of information about orangutan
Long term research	Stop logging
	Release Orangutans free from disease and survival
Share ideas to keep wild orangutan in wild forest help focus on this goal	Extinction not only Indonesian issue What happens in rest of world is important to forest in Indonesia and orangutan Bad policy and hidden agendas need to be addressed and assessed Need money for law enforcement and other things that need to be loosened from beaurocrats grip All policy must somehow to be taken away Lessen demand from other countries
Example of monument of evolution and plight of great apes that occur. Problems are different but need to be more than habitat gov and world community needs to be on political agenda of World UNESCO and International Agencies to lead the way. Specific problems of orangutan and fit into the larger area of great apes	Illegal logging Poverty of those living nearest to populations of wild orangutans Public support of law enforcement Concern of communities and up the value and the respect for orangutan Need to be international effort Support to all those who work in situ
Optimal sharing of information so all participants can do their work more effectively For me personally that means using the partnerships and information available so that WWF (Indonesia) can make their next 3 year project a success	Country in political and economical distress with its major resource the habitat and food for orangutans. Use emotional ecological and economic value of orangutan for their conservation
To try to get dedicated people to actually work together by sharing experiences and information whether it be in reintroduction or in habitat protection	Lack of education on all levels and the continuous corruption in the country Stop foreign import of Indonesian hardwoods
What role can Malaysia play in conserving wild orangutans	Illegal logging in protected areas Impact of regional autonomy Establishment of effective law enforcement Generate broad support for orangutan and nature conservation Establishment and support of new active long term research sites Use of logged over forest as orangutan habitat Establish new model of protected areas including private as well as conservation concessions Establish viable eco-tourism models Identify priority areas that need to be absolutely protected vitally important and become focus of targeted law enforcement Strengthen and impact of reintroduction and rehabilitation on in-situ protection of orangutan
To determine how best the efforts of lay people can be mobilized immediately to assist conservation organizations in protecting habitat (if has to include more than just giving money) A voice to own governments	Lack of economic alternatives for people Lack of law enforcement of illegal logging and mining Lack of understanding of long term implications How to effectively and immediately respond to the issue in as many ways as we already know are needed

<p>A voice to Indonesia government Pressure on illegal trade from consumer end Also how to mobilize local people</p>	
<p>To achieve a realistic policy on orangutan re-introduction issues</p>	<p>Confiscations and reintroductions are not a long term viable solution for the conservation of orangutans but suitable protection of habitat and viable populations</p>
<p>Learn and share information to help rehabilitation to become unnecessary To review and revise rehabilitation process of all centers To utilize results of recent research To reduce mortality of orangutan in the rehabilitation process To effectively release more orangutans To reduce the time take for release To increase survivability of released orangutans</p>	<p>Habitat destruction and law enforcement and public education and alternative incomes Disease control and implementation of recent research findings. Ethical issues (use of vaccines)</p>
<p>Across all aspects of orangutan conservation efforts involving wild and rehabilitant orangutans to develop extension education, reintroduction protocol {health management}, conservation aims To break down the barriers that exist within existing conservation efforts so that our combined collaborative efforts can be channeled into orangutan conservation</p>	<p>Implementation of conservation and recommendations for habitat destruction and law enforcement to address socio-economics of local people for effective conservation. Protection on “paper” is not enough. Have to have political will and commitment on behalf of the Indonesian government.</p> <p>Conservation is a luxury that you can afford to think about when you have a full stomach.</p>