

Orangutan Conservation and Reintroduction Workshop

19 - 22 June, 2002
Palangka Raya, Kalimantan,
INDONESIA

FINAL REPORT

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The Gibbon Foundation
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The Primate Specialist Group (SSC/IUCN)
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Orangutan Conservation and Reintroduction Workshop

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**Palangka Raya, Kalimantan
Indonesia**

FINAL REPORT

Section 1 EXECUTIVE SUMMARY

Orangutan Conservation and Management Workshop Executive Summary

Introduction

In June 2001, the Conservation Breeding Specialist Group (CBSG), in collaboration with the Wanariset Orangutan Reintroduction Project and the Primate Specialist Group, conducted a workshop to produce a plan to counter the primary threats to orangutan survival and minimize their risk of extinction.

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 in 1999. 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.

Either directly or indirectly, all the strategies recommended at the 2001 workshop focussed 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 2001 Orangutan Workshop was the first step in a dynamic and evolving process. Toward this end, CBSG was invited by The Gibbon Foundation and The Balikpapan Orangutan Survival Foundation to conduct a follow-up Orangutan Conservation and Reintroduction Workshop. The workshop was hosted by Lone Dröscher Nielsen and Kisar Odom of Nyaru Menteng on 19 – 22 June 2002 at Palangkaraya, Kalimantan. Forty-eight workshop participants, many of them key orangutan experts from 6 countries (see Section 9 for list of participants), focused on: 1) compiling the latest information, 2) determining standards and guidelines for rehabilitation centers, reintroduction efforts, and wild orangutan conservation efforts, and 3) implementing the 2001 workshop recommendations.

Veterinarians used this opportunity to conduct the first annual meeting of the *Komisi Doktor Hewan untuk Orangutan* (Veterinary Committee for Orangutans) established at the 2001 workshop to discuss and update veterinary issues relating to orangutan conservation. In addition, the Rehabilitation Center Alliance members gathered with the goal of fostering better links and cooperation between the centers and all of the orangutan range country experts. Other participants, including Indonesian biologists,

researchers and wildlife managers, were tasked with developing specific action plans for implementation of recommendations in the areas of habitat and species protection, research, public awareness and education.

The Workshop Process

The Conservation Breeding Specialist Group (CBSG) is one of the 125 Specialist Groups in the Species Survival Commission (SSC) of IUCN. Within the SSC, the primary goal of CBSG is to contribute to the development of integrated and viable conservation strategies and action plans in order to facilitate the survival and conservation of threatened species. The CBSG Workshop process is based upon biological and sociological science. CBSG has 15 years of experience in developing, testing, and applying a series of scientifically based tools and processes to assist in risk characterization and species management decision-making. These tools are used in intensive, problem-solving workshops to produce realistic and achievable recommendations for both *in situ* and *ex situ* population management. They are based on population and conservation biology, human demography, and the dynamics of social learning.

The CBSG Workshop itself is intensive and interactive and the 2002 Orangutan Conservation and Reintroduction Workshop was no exception. It took place over a full three and-one-half days, evenings included. The Workshop began with opening ceremony presentations by Dr. Willie Smits, BOS Board of Directors, Mr. Adi Susmianto, Director of Biodiversity Conservation and Mr. Nahson Taway, Vice Governor of Central Kalimantan.

The participatory process began with each person introducing him- or herself and giving answers to the following questions:

1. What is your vision for wild orangutans in the year 2012?
2. What role do you see yourself playing in the effort to minimize orangutan extinction risk over the next 10 years?
3. What is your personal goal for this workshop?

A common vision of sustainable, safe populations of wild orangutans in protected areas was evident in the responses that can be found in Section 7 of this report. Also evident was a willingness on the part of the participants to share information and work together to solve the crisis facing the orangutans and their habitat.

Participants divided into 5 working groups based on the groups established at the 2001 workshop: Reintroduction and Rehabilitation, Veterinary Issues, Habitat and Species Protection, Identification of New Field Research and Release Sites, Socio-economic and Governance Issues, Public Awareness and Education.

Each working group was asked to:

- Update the situation facing orangutans and their habitat and identify and define any new issues that have arisen in the past year
- Review recommendations and actions resulting from the 2001 workshop and develop updated recommendations reflecting new issues
- Implement recommendations (i.e. produce standards and guidelines) where possible
- Revise priority actions to increase implementation potential
- Prepare working group reports

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 topic, identifying specific recommendations and actions.

In addition, the veterinary issues group and the rehabilitation and reintroduction group implemented their recommendations to develop guidelines and standards of practice. Workshop participants extensively reviewed these policies in plenary sessions and consensus was reached on each.

Each working group prepared a draft working group report during the workshop and recommendations reviewed and agreed upon by all participants. The final report was reviewed, revised, and translated into Bahasa Indonesia by volunteer participants. Detailed working group reports can be found in sections 2 - 6 of this document.

Summary of Workshop Results

Establishment of the Orangutan Conservation Forum (OCF)

One of the most exciting and promising outcomes of the workshop was the consensus decision to establish a formalized structure to continue the momentum gathered here and to move the process of implementation forward. A temporary name was chosen: Orangutan Conservation Forum (OCF). There was agreement that IUCN/SSC CBSG has provided significant value to the group and the forum should maintain this affiliation. The initial functions of this forum are to:

- Provide input on policy
- Fundraising
- Information dissemination
- Communication
- Follow-up/implementation of workshop recommendations

Actions

- Pak Sugardjito will drive this forum and he will need administrative assistance.
- Ashley Leiman will look onto the potential for seed money from GRASP (UNESCO) to support the forum.

- A temporary steering committee was established consisting of:

Chair: Pak Sugardjito

Working group Representatives

Veterinary: Citrakasih Nente

Kris Warren

Education: Jeane Mandala

Habitat/Species Protection: Ian Singleton

Andy Marshall

Mark Leighton

Ichlas Al Zaqie

Kala Mulqueeney (proposed LLEC?)

Reintroduction: Birute Galdikas

Carel van Schaik

Rehabilitation: Raffaella Commitante

Leif Cocks

UNEP/GRASP Representative: Ashley Leiman

IUCN/CBSG Advisor: Norm Rosen

- All workshop participants will be encouraged to input into the forum but the focal people from each working group will serve as filters to minimize the work load on Pak Sugardjito.
- Isabelle Lackman Ancrenaz (from Sabah) will be asked to serve on this steering committee.
- The steering committee's first task will be to determine the composition of an active advisory committee for the forum. It was suggested that the steering committee identify key functions of the forum and then representatives who could actively represent these functions on the forum.

Working Group Recommendations

Rehabilitation and Reintroduction

This group developed guidelines for orangutan rehabilitation and release (see section 2).

Recommendation of this group include:

- **Produce Final Draft of Rehabilitation Guidelines**

A nutritional analysis needs to be done in order to get information to centers regarding how much of each item needs to be included in the diet.

- **ARKS/MedARKS**

Each centre designate a person responsible for record keeping, who will also be the contact person for other centers.

- **Body Measurement Chart**

All centers to agree upon and use as a standard chart.

- **Weight Chart**

Design a weight chart for standard use by all centers.

- **Induction Form**

Develop a form from recommendations given at this workshop.

- **Caretaker Health/Protocol**

Translate and produce signs which can be posted in all centers.

- **Cage Standards**

Review and modify current formulas used regarding minimum cage requirements in zoos for use in rehabilitation centers.

- **Funding from Zoos**

Prepare letter to ministry suggesting a 1,000 USD annual fee for CITES from every zoo holding (and presumably wishing to move orangutans at some point in the future).

- **Law Enforcement**

Investigate potential sources of funding for licensing of patrols.

Release Site Issues

- Selection of release sites.
- Acceptable scenarios for reintroduction sites are ranked in decreasing order of preference, as follows. These scenarios are consistent with current IUCN primate reintroduction guidelines.

Plan A (Ideal):

- a. Suitable habitat
 - b. Within the current range
 - c. No wild orangutans
 - d. Isolated from existing populations
- We recognise that this ideal situation is rarely feasible so compromises are necessary. However, because of the risk of disease introduction, geographic isolation remains an essential feature. It is recognised that the situations in Borneo and Sumatra differ significantly.

Plan B (First compromise – preferred)

- a. Suitable habitat
- b. Within the current range
- c. Quite small wild populations (e.g., <50 individuals and/or density $\leq 0.1/\text{km}^2$)
Note: Density is often determined by ecological carrying capacity. Adding individuals to an area with a low density could crash the system.
- d. Geographically isolated from existing populations (could create artificial barriers)
- e. Demonstrably well below carrying capacity. **Note:** It is often difficult to determine carrying capacity, even with extensive studies.

Plan C (Second compromise)

- a. Same as Plan B, except areas outside the current and within the historical range

(Note: There is doubt about the historical range; in this discussion, it means the range occupied by orangutans based on written historical records).

- Good ecological studies of carrying capacity are required to support site assessment and selection of sites.
- Prospective sites should be professionally assessed through field surveys for:
 - a. Wild orangutan presence, distribution, and density
 - b. Suitability of flora and fauna (fruit and permanent foods; other sensitive species)
 - c. Forest fragment size
 - d. Dispersal barriers (existing and potential)
 - e. Site security
 - f. Political considerations (e.g., where possible, within political units)
 - g. Potential for human-orangutan conflict
 - h. Potential for enhanced conservation status.

Veterinary Issues

1. All orangutans arriving at rehabilitation centers 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 wellbeing 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.
2. Government authorities from PKA should try and gather as much information as possible about the history of individual orangutans who are known to be held in captivity. It is 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.

3. The orangutans will be placed in separately housed quarters of sufficient space, with appropriate ventilation and provision of water. Wastewater 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.
4. 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.
5. 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.
6. 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.
7. 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 euthanized. 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 euthanized. If the individual is still negative to both tests and the clinical signs of suspected tuberculosis are getting worse then the individual should be euthanized. 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.

Note: Because of the controversial nature of the use of euthanasia, the Rehabilitation and Reintroduction Working Group teamed up with the Veterinary Working Group to formulate the following policy statement: “*Respecting current opinion that Great Apes have inalienable rights to life and recognising the great risks associated with disease transmission to other orangutans and human staff, we nonetheless have a responsibility to alleviate suffering by terminating life.*” For more on the use of euthanasia, please refer to issue 3.2 in the Veterinary Issues Working Group Report.

8. Given the current poor knowledge of diseases affecting ex-captive and wild orangutans in particular, the use of vaccines in orangutans in Reintroduction centers is not recommended.
9. All animals that die during or following the quarantine period will undergo a full necropsy and histopathological examination. No animals in contact with the individual that 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.
10. 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.
11. Diagnostic tests for other diseases (Salmonella, Shigella, Campylobacter, Klebsiella) are optional depending on specific clinical assessments.
12. Further screening for HAV and HCV may be considered necessary, depending on clinical circumstances.
13. 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.
14. 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.
15. Wild individual orangutans, that are not brought into rehabilitation centers 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.
16. 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.
17. 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.
18. A manual containing all operating procedures should be prepared and kept on-site at each facility.

This will include all quarantine and health procedures listed above, as well as those defining the
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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.

19. 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.
20. 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.
21. These recommendations should be forwarded by IUCN to the Department of Forestry of the Republic of Indonesia for approval and implementation.

Habitat and Species Protection/Socioeconomics and Governance

The recommendations of the Habitat and Species Working Group fall within the following three equally important and mutually supporting areas:

- A. Strategic investment of effort through the application of principles of conservation biology.
- B. Law enforcement.
- C. Incentives for communities and local government to contribute to conservation.

A. Strategic Investment of effort through the application of principles of conservation biology.

1. Conservation efforts should be directed to all sites with potentially viable populations to minimize extinction risk.
2. Systematic surveys throughout the orangutan range should be conducted to ensure that all priority sites are identified.
3. Another population and habitat viability analysis (PHVA) that incorporates new orangutan field data with the aim of more accurately estimating minimal viable population size should be conducted.
4. Experienced conservation biologists should assist local and national stakeholders to identify and implement a land use plan for conserving these priority populations. Capacity building with

local government (e.g., BAPPEDA Tingkat I and II) is key to this process.

5. The integrity of priority areas should be maintained by preventing their subdivision/fragmentation by road building, canals, fire, forest conversion or other fragmentation methods (e.g., the Gunung Leuser road issue needs to be addressed).
6. Introduction of orangutans into areas outside their current range will cause ecological disruption for other organisms, some of which may be endangered species. Any proposed introduction into areas outside the current range should be considered by a wide range of tropical ecologists (not only orangutan experts), and only conducted where it has conservation value (in accordance with IUCN primate reintroduction guidelines).

B. Law enforcement.

7. Orangutan protection units should be implemented. Efforts should be made to standardize methods, co-ordinate protocol, and monitor success. The results of the pilot studies that are beginning at Gunung Palung and other locations should be reported and disseminated to OCF.
8. Given the existing challenges with law enforcement, new methods that also defend priority areas should be investigated and rationally evaluated (e.g., river barricades, tree spiking [see dissenting opinion, Section 8])
9. The Orangutan Conservation Forum (OCF) will establish a Law and Law Enforcement Committee (LLEC) to undertake continuing review and analysis of law related to orangutan conservation, direct research into enforcement, and undertake conservation education of enforcement officials and the legal profession.
10. The OCF LLEC will invite high level and local representatives of the policing, enforcement, and judicial community to next year's workshop and consider conducting an earlier workshop to be held in December 2002 to consider these issues.
11. The OCF LLEC will review the effectiveness of the Conservation of Living Resources Act 1990, the Forestry Act 1967/1999 and consider the amendments currently proposed to this framework legislation.
12. The OCF LLEC should direct systematic independent research (NGO or academic) to learn the facts and figures about the current status of the legal system before meetings are held with governmental officials.
13. The OCF or LLEC push for review of the effectiveness of the Conservation of Living Resources Act 1990, the Forestry Act 1967/1999 and consider the amendments currently proposed to this framework legislation.

14. Research should be conducted into whether enforcement officials in local jurisdictions clearly understand their policing and enforcement responsibilities, and the bifurcation between the enforcement roles of local vs central administration.
15. Research should also be conducted into the potential for streamlining enforcement procedures for apprehending, processing, charging, and ultimately prosecuting offenders.
16. The Head of Police, the Minister of Internal Affairs, the Minister of Forestry and the Minister of Justice should be lobbied to ensure that the enforcement responsibilities of the central, local, and forest police are clarified to those persons implementing enforcement of laws relating to illegal logging and orangutan protection.

C. Incentives to communities, local governments, and HPHs.

17. Identify new potential incentives and independently evaluate which ones are most appropriate (have the highest conservation value) for a particular area. And this should be done in conjunction with a socio-economic survey of the area in question.
18. Secure long-term funding for the priority areas.

Field Research and Release Sites

Most of the recommendations developed last year are still completely valid. First, research sites are still disappearing, so active defense of existing ones remains a top priority. In 2001 we called for greater collaboration across research sites. This recommendation, too, is being followed up on. A workshop was held in San Anselmo, California in February 2002 at which orangutan cultures were mapped and a first attempt was made at a comparative socioecology. At this meeting, we also made strides toward standardization of the research protocols, and a set of guidelines has been uploaded to the website: (www.orangutannetwork.net). Researchers are actively discussing collaborative field efforts, including island-wide umbrella projects that cover all active field sites. Most urgent remains the integration of field and reintroduction projects. This is why the research group decided to join the reintroduction group to help develop standardized guidelines for reintroduction.

Public Education and Awareness

To bridge the communication gap across groups involved in education, and avoid replication of effort, the working group recognised that the centralised education organisation must become operational. The *Forum Komunikasi untuk Pendidikan Konservasi Orangutan* was given the equivalent name in English of Orangutan Conservation Communication Education Forum (acronym OCCEF) and the group defined its aims:

- to act as a centralised body for communication and facilitation of information sharing between all groups/individuals involved in orangutan conservation and other environmental education. This includes individuals who are interested in starting new education/awareness programmes;
- to share and generate new ideas for educational resources (methods and specific resources); and
- to seek funding for production, collection and distribution of educational materials to benefit all organisations involved with OCCEF

The implementation of educational programmes does not fall under OCCEF's remit, nor will OCCEF seek funding for educational grants for individuals or individual organisations.

OCCEF will be based at the headquarters of *Lembaga Peduli Lingkungan Hidup – Kalimantan Tengah* (LPLH-KT) in Palangka Raya for the initial six months, to start in September 2002. Office space has kindly been donated by Alue Dahong of LPLH-KT.

The Orangutan Tropical Peatland Project (OuTrop) proposed their Education Co-ordinator as the initial Forum Co-ordinator based at LPLH-KT. Jeane Mandala will continue to co-ordinate the Forum on a temporary basis until September 2002.

OCCEF hopes to be able to employ a permanent member of staff for co-ordination of the Forum after the initial six-month period. All communications with OCCEF should be directed to Jeane Mandala until September 2002 at <occefgroup@yahoo.com>. The address will remain the same and a new co-ordinator to be confirmed after that date.

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Section 2

REHABILITATION AND REINTRODUCTION WORKING GROUP REPORT

Rehabilitation/Reintroduction Working Group Report

Ecotourism Recommendations and Release Guidelines

A. Tourism

There is a partly legitimate and largely unfilled need for some form of orangutan experience. It is critical that we address this need in order to ensure the best possible way of fulfilling and channelling it, in light of our aim of putting orangutans first. Our recommendations concern future tourism enterprises that involve orangutans. We advise current orangutan-focused tourism enterprises to consider these recommendations. Our primary focus is orangutans under the care of rehabilitation/ reintroduction programs because tourism has traditionally focused on these individuals.

We recognize that for tourism, orangutans fall into several categories, as do tourists (see table below). Access to orangutans should be allowed only as follows (Y/N in table). Shaded cells indicate probable preferences. Reintroducible orangutans are ex-captives who are candidates for reintroduction to forest life or who have been reintroduced. Non-reintroducible orangutans are ex-captives who are not candidates for reintroduction because, e.g., of chronic illness or permanent disability.

Tourists \ Orangutans	Wild	Reintroducible	Non-reintroducible
Mass	N	N (video, info center)	Y (view, info center)
Animal focused	N	N (video, info center)	Y (view, info center)
Wilderness focused (special interest)	Y	N/a	N/a

1. No tourism should be allowed with reintroducible orangutans. Acceptable are visitor education centers at rehabilitation/reintroduction projects where viewing facilities ensure no contact or other form of interaction with orangutans. The emphasis should be education and awareness.
2. Given that tourism involving reintroducible orangutans is unacceptable, we recommend exploring the following alternatives. We emphasize that these alternatives must be carefully studied before putting them into effect. Proposals for tourism ventures that involve orangutans should involve input from ecotourism experts.
 - a. Viewing non-reintroducible ex-captives under conditions that ensure no contact or other form of interaction. Examples include viewing from boats or viewing towers into sanctuary-type environments that support semi-free life, preferably a secure area of forest; viewing from one-way viewing windows into naturalistic enclosures; or viewing from boardwalks routed through forest areas where orangutans and other wildlife

cannot be disturbed. This assumes that sanctuary-type care facilities are under the jurisdiction of reintroduction programs and therefore subject to the same conservation aims and ethical considerations.

- b. Carefully supervised, small group opportunities to view wild orangutans in their natural habitat, to appeal to wilderness-oriented visitors and to encourage change in visitor orientation. Prerequisites for opening such tourism ventures are security and political stability in the proposed area. Because tourism poses some risks to wild orangutans, it is preferable to avoid tourist projects in priority areas for orangutan conservation. Non-priority areas are not candidates for immediate protection and/or incentive efforts so local community-based tourist projects may help support the area. Such projects can be used as models for future potential eco-tourism ventures in priority areas. Guides must be drawn from local communities, specially trained by orangutan experts, officially licensed by a local governing agency, and endorsed by an orangutan agency of international repute. Licenses can be revoked for guides who do not comply with standards. Tourist projects are responsible for clarifying beforehand what visitors can, and cannot, expect from the experience (e.g., no contact with orangutans, no feeding, etc.). Any such system must be well-planned and well-managed in regard to habitat and species disturbance and waste disposal; it must ensure that economic gains are channelled to appropriate recipients as much as possible (e.g., orangutan conservation projects, local communities).

Across the board, all tourist initiatives must address the problems that very commonly infect tourist ventures over the long term, as outlined under the “limits of acceptable change” model of tourism, and put in place monitoring and correction procedures to counter the deterioration that typically occurs. This model outlines typical stages in tourism operations and the particular strengths and problems encountered at each stage¹. We expect that reintroduction projects will share their experiences and knowledge in tourist ventures with one another.

¹ Duffus, D. A. & Dearden, P. (1990). Non consumptive wildlife oriented recreation: A conceptual framework. *Biological Conservation*, 53, 313-231.

B. Reintroduction

Release Sites

Successful reintroduction is the ultimate aim of the rehabilitation process. It is therefore a critical component. There are many potential risks and benefits involved in the selection of release sites. They need to be carefully evaluated and weighed in order to find the optimal solution. Because of incompatibilities or practical problems, the ideal reintroduction site is not always available. Hence, compromises may be necessary. We first formulate the ideal reintroduction site and then suggest two compromises. The first compromise is preferred over the second because of the possible ecological

impacts of reintroduced orangutans on other endangered species, plant and animal, and because of the risk that reintroduced orangutans introduce non-endemic diseases to other species in the area.

1. Acceptable scenarios for reintroduction sites are ranked in decreasing order of preference, as follows. These scenarios are consistent with current IUCN primate reintroduction guidelines.

Plan A (Ideal):

- a. Suitable habitat with suitable protection status
- b. Within the current range
- c. No wild orangutans
- d. Isolated from existing populations
- e. Legal basis for habitat protection

We recognize that this ideal situation is rarely feasible so compromises are necessary. However, because of the risk of disease introduction, geographic isolation remains an essential feature. We recognize that the situations in Borneo and Sumatra differ significantly.

Plan B

- a. Suitable habitat with suitable protection status
- b. Within the current range
- c. Quite small wild populations (e.g., < 50 individuals and/or density < 0.1/km²)
- d. Geographically isolated from existing populations (Could create artificial barriers)
- e. Demonstrably well below carrying capacity
- f. Legal basis for habitat protection

Plan C

- a. Same as Plan B, except areas outside the current and within the historical range (Note: there is doubt about the historical range; in this discussion, it means the range occupied by orangutans based on written historical records)

2. We need good ecological studies of carrying capacity to support site assessment and selection.
3. Prospective sites should be professionally assessed through field surveys for
 - a. Wild orangutan presence, distribution, and density
 - b. Suitability of flora and fauna (fruit and permanent foods; other sensitive species)
 - c. Forest fragment size
 - d. Dispersal barriers (existing and potential)
 - e. Site security
 - f. Political considerations (e.g., where possible, within political units)
 - g. Potential for human-orangutan conflict
 - h. Potential for enhanced conservation status
4. Final site selection will be subject to discussion at a workshop of orangutan and other relevant experts. The workshop should be preceded by these field surveys.

5. It is worth considering ex-logging concessions as potential release areas, provided that appropriate habitat enrichment is implemented.

Long-Term Monitoring

Sometimes in the past, reintroduction practices have been sub-optimal (e.g., cold releases, unsystematic tracking of released orangutans). So much has been invested in preparing orangutans for release that it makes no sense to reintroduce them without tracking their success and revising programs to enhance their success. Long-term monitoring is also important with respect to public credibility and accountability. For this reason, long-term monitoring is essential; this includes ecological and other species monitoring as well as monitoring individual reintroduced orangutans.

Basic guidelines on post-release monitoring are in preparation for the Bukit Tiga Puluh program (see Ian Singleton). A questionnaire has been circulated to all rehabilitation programs on their post-release monitoring practices (see Ashley Leiman).

Individual Monitoring

There is a moral responsibility to monitor released orangutans for as long as possible to ensure their success.

1. Permanent Marking. Needed is some way of permanently identifying individual orangutans after their release. Possible methods include: natural identifying marks and careful recording of these marks as they occur (this is inadequate for individuals that change substantially over time, e.g., maturing males), photo records, chips (not readable from a distance), tattoos (e.g., on inner thighs; but tattoos may not be identifiable on mature individuals because of hair and skin color).
2. Tracking. Telemetry would be ideal for relocating free-ranging rehabilitants, but the technology is probably not yet adequate to the task. Radio tracking (horizontal) is impractical in the rainforest. Argos satellite system gear is still unduly cumbersome and probably inadequate for the time frame needed (e.g., minimum 4 yrs). Internal devices are not well enough developed to be usable; neck devices are unacceptable; ankle or wrist devices could be considered. Promising systems must be carefully tested, e.g., in a halfway house like situation where effects on the individuals wearing the devices can be monitored closely. Other systems of relocating free-ranging reintroduced orangutans should be explored, e.g., intensive searching.

We need a serious study of technology that would allow long term monitoring.

3. Health. Non-invasive health monitoring can be done through urine, feces, and (where possible) hair samples. Fruit remains and wadges are a possible source of saliva samples.

We need policies on how to proceed when orangutans are visibly ill. Problems likely attributable to human interference should be addressed. We recommend treating these problems via case conferences, within the program and consulting the broader community. If the individual involved was adequately prepared for forest life, the problems are absolutely not caused by humans, and the problems are typical of wild orangutans, we should not intervene. In order to minimize post-release health problems, we recommend that halfway house conditions be ecologically as close as possible to release site conditions.

We need input on the non-invasive health monitoring that can be done through urine, feces, and (where possible) hair samples.

4. Demographics. All births and deaths should be recorded, along with the circumstances surrounding them (e.g., possible paternity, reason for death). For all deaths, an autopsy is required; tissue samples (for veterinary needs) should be properly obtained and properly stored for future investigation.

Ecological Monitoring

If orangutans are reintroduced into areas that still contain small wild orangutan populations, then some of the pressures on the habitat and other species become less relevant. We assume that site selection has been careful and an assessment of carrying capacity has been made in advance of reintroductions. Ecological monitoring should be conducted using established ecological methods (e.g., BACI).

1. Aspects of carrying capacity and fluctuations (phenology). What is needed is continuous monitoring of forest productivity, forest damage, the wild orangutan population (if present), impact of reintroduced orangutans on vegetation structure and composition, and predator presence. These data are needed to inform decisions on intervention (e.g., supplementary provisions, total number of orangutans that can potentially be supported, need for and progress with habitat enrichment).
2. Impact on other species (competitors). Needed are periodic systematic surveys on the rest of the animal community. The health of individuals of possibly affected species should be monitored whenever possible.

Evaluative Monitoring

One responsibility of reintroduction projects is assessing the effectiveness of rehabilitation facets of their program, readiness-for-release criteria, release procedures (e.g., group size, release site) and post-release care, then intervening and/or revising the program based on this feedback. Evaluations should be sensitive to the importance or individual needs, competencies, and progress. Program evaluation should be continual.

We encourage collaboration with other projects (e.g., wild orangutan and other primate research projects) operating in similar habitats, as a basis for establishing readaptation and ecological benchmarks.

On a broader scale, we need to establish mechanisms for all programs to evaluate the procedures being recommended. OCF (the orangutan conservation forum) is one appropriate vehicle for this evaluative exercise.

Rehabilitation Guidelines

There are three major aspects of orangutan health that need to be incorporated into the rehabilitation process: physical, mental, and social health. Newly acquired orangutans, at first, usually require the project manager to concentrate on the immediate physical health needs of the individual. During the earliest years of infant development, the mental health requirements of close physical contact and movement are most important. As the infant develops, the acquisition of social and forest skills gradually increases in importance. Finally, forest training becomes the most important aspect of rehabilitation, but should be encouraged throughout the process.

Note: These guidelines are general and may not apply to all orangutans given their highly individualistic nature and varied histories. Therefore, it is important to stress the need for flexibility and adaptability while striving to achieve the goals below.

Physical Health

Veterinary Procedures: For crisis care, on-going general health, quarantine and arrival procedures see Veterinary Protocol under separate cover.

Diet: The diet should meet the nutritional needs of the orangutan. Orangutans should be presented with a large variety of foods (preferably foods that they will encounter in the forest). This includes the correct balance of fruit, vegetables, protein and leaf matter. The planned diet should also be age and health specific to each individual.

(Notes from K. Warren: Poor nutrition, specifically related to fatty liver degeneration syndrome is attributed to high carbohydrate but low protein diets: adding meat, egg, tofu, and soy beans can prevent this)

Food Preparation: All fruit and vegetables should be disinfected with a non-toxic solution before being fed out (if pesticides are present, scrubbing as well as disinfecting needs to be done). No processed food should be fed except during transitional phase at entry.

Water Provision: Fresh clean water should be provided daily. This could be in the form of diluted milk, weak tea, as well as plain water. Care does need to be taken regarding standing water available all day long, if it promotes fungus growth on mouth and hands.

Cage Standards: Size and design to include age/health/personality specific considerations.

<i>Age/years</i>	<i>Caging</i>	<i>Time Spent out in forest</i>	<i>Ind Per Cage</i>
0 to 2	None	10 hours	N/A
2 to 3	Specification under construction	10 hours	0 to 5
3 to 5	Specification under construction	Forest training (length of time can be individual per centre)	To be determined
5 to 7	Semi release situation / socialization cages	Forest training (length of time can be individual per centre)	To be determined
7 +	Soft release situation	Forest training/reintroduction	N/A

The aim would be to try to adhere to a "no cage" policy for 0 to 2 year olds. It is understood that often a cage may be necessary for certain individuals initially, but attempts should be made to eventually get the orangutan comfortable outside a cage environment whenever possible.

Cage Maintenance: All caging needs to be hosed down and swept clean twice daily. All cages need to be disinfected three times per week.

Transport Cages: These must meet IATA guidelines (and where they cannot - reasons must be recorded)

Caretaker Observation and Skill Level: All caretakers must undergo husbandry/hygiene/observational training with particular attention being paid to particularly vulnerable orangutans being paired with an experienced caretaker(s) familiar with its problems.

Caretaker Health Maintenance: This should include personal health and hygiene practices. Uniforms should be worn at work (scrubs as well as long sleeved shirts and pants or trousers with pockets), boots during rainy season, and sandals okay during dry. Changing and shower facilities needed for caretaker use before they go home. Masks and gloves should be worn during autopsies, when handling sick and quarantined orangutans, and as needed for certain procedures.

Recommendation: Appropriate personal protection methods must be adopted at each site: Project managers and veterinarians will decide on procedures, protocols, enforcement and instruction of staff. Possibilities are: gloves being worn during all forms of animal contact and/or stringent hand washing procedures with scrubbing using benadine/or equivalent. Neither of these practices will work unless stringently and repeatedly enforced.

Medical Waste:

Procedure: burn, crush and deep bury (1.5 m +).

Body Disposal:

Procedure: incinerate or deep bury (1.5 m +) If project managers decide, specific body tissues can be saved and bodies can be wrapped in cloth, and after decomposition (6 months +) bones can be exhumed for education and scientific purposes. The transfer and use of body parts needs to be carefully monitored by a scientific advisory board. A set of protocols for tissue/bone collection and distribution must be developed.

Mental Health

Diet Presentation: Diet preferences should be considered (especially taking into consideration previous diet and slowly incorporating new diet with old). Food should be fed out in small portions frequently through the day. Where possible, food should be left in their natural state to encourage orangutan manipulation and exploration.

Environment: Individual nesting baskets should be provided in all cages. Large pieces of leafy materials (browse) need to be brought into cages twice daily (includes quarantine cages). Where possible, cages should be surrounded by natural vegetation

Enrichment: An environmental enrichment program needs to be in place to ensure the stimulation of mental (and physical) activity of orangutans throughout the day and these enrichments need to be varied periodically. Each cage should have some kind of flexible climbing apparatus, which should be in place permanently, (i.e. a tractor tire that has been cut into one long strip and hung in cages. Half tires can also be used as swings)

Caretakers: For young infants, time spent with caretakers, involving movement and body contact is required for good mental health. Infant contact, and contact with juveniles, should take into consideration the individual's previous history.

Group Size:

0 - 2	1 caretaker per two infants (maximum of 7 orangutans per group)
2 - 5	1 caretaker per three infants (maximum of 7 orangutans per group)
5 +	Individual centre protocol written up by project managers

Wild Behaviours: In the effort to keep an orangutan mentally healthy, project managers, whenever possible, should not discourage existing wild behaviours (except as is necessary for medical administration and feeding, especially in older wild caught individuals).

Social Health

Peer Learning and Social Skills: These are essential for the rehabilitation of orangutans. Project managers need to have monitored programs to ensure orangutans develop social skills and have access to peer learning at their individual rates of development. There also needs to be a slow track program for introducing orangutans who are fearful of others to their peer group. Gaining experience with different sexes and age groups would also be advantageous.

Forest Training

Diet: Orangutans must be exposed to as many local forest foods as possible.

Climbing: Real forest access and training must be initiated as soon as possible in order to develop good climbing skills and muscular development.

Nest Building: Transmission of nest building behaviours from skilled to unskilled individuals should be taken into consideration of group composition in the forest training.

Danger Recognition: Wherever possible, orangutans should be taught correct behaviours towards known dangers that they might encounter in a forest environment. (i.e. placing a fake snake on ground, with caregiver displaying appropriate behaviours). The issue of humans as potentially dangerous must also be incorporated. Recommendation: Slowly reduce the number of humans the orangutan comes into contact with through the process.

Individual Release Readiness Criteria

1. Should be able to build nest.
2. Should have experience with as many forest foods as possible and know at least 25 species of local food sources with at least half of these being permanent food sources.
3. Should be predominantly arboreal and possess good climbing skills.
4. Should prefer orangutan contact over human contact.
5. Should have had experience with at least one fruiting cycle and one non-fruiting cycle in an intermediate release setting where human contact is at an absolute minimum (i.e. Fruit supplementation during low fruiting season) as well as being able to maintain normal range of body weight during this time.
6. Post-release monitoring must be in place before final release.

Veterinary/Orangutan Management Issues

Birth Control - It is agreed that breeding in captivity is not desirable. This is a management issue (and where possible, male and females of reproductive age should be housed separately) not a contraceptive one, unless management cannot cope with problem, then vets can offer contraceptive help.

These guidelines should be adhered to unless for reasons of sound animal management (upon a per individual basis and must always have documentation as to why guidelines were not able to be adhered to).

IMPORTANT:

All centers must be open to visits from other project managers and veterinarians working at the other centers. All centers must be open to accountability of their successes and failures, as this will encourage information sharing, aid and goodwill. There should be a spirit of cooperation between the project managers and the centers.

Recommendation:

Within the Orangutan Conservation Forum there should be a sub-group formed of project managers and veterinarians that will meet regularly to share information and provide technical assistance to each other. These meetings should alternate between all the centers.

In addition to project managers meetings, a central holding location for samples collected (i.e., urine, fecal, tissue, blood, etc.) at all centers be established. Suggested location: LIPI, as they have a deep freeze storage facility.

This group would also like to state at this point that we believe there needs to be an open atmosphere at centers which encourages worker/staff input and suggestions.

Release Guidelines

It is understood that the project be responsible for modifying release guidelines in response to findings from long term monitoring of previous orangutan releases.

Orangutans should be released only when they are ready, and as soon as possible after they are ready. Scheduling of releases should correspond to good food availability at release sites.

Whenever possible group releases are preferred, however, individuals can be released alone if warranted, eg. in the case of rescued wild individuals and individuals being re-released.

Scheduling and all release procedures should be designed and followed to minimize stress and maximize quality of care for the orangutans.

Once individuals achieve release criteria:

Preparation for Release

1. A final reassessment and health check of all release candidates based on release criteria needs to be done a week prior to release. Individuals that fail to meet criteria should be held back for further assessment.
2. Each group release site should be selected to reduce competition and avoid overcrowding in the area, yet close enough to previously released groups to allow for transfer of skills. Data from long term monitoring should be the basis of selecting release sites.

Release Group Composition

1. Release group members should be compatible.
2. Release groups should contain a balanced sex ratio.
3. Release group size should be no more than 10 individuals because this:
 - a. minimizes competition, and
 - b. allows for more effective monitoring and support.
4. Where possible, individuals showing good forest skills should be included in the release group.

Release Group Preparation

1. Adequate time should be provided for compatible relationships to develop within the release group.
2. This group preparation should occur in a safe, controlled, protected forest environment.

Transfer To Release Site

1. Acceptable methods of transport are (in decreasing order of preference):
 - a. hand-carrying
 - b. caging
 - c. caging plus anesthetic
2. There should be a maximum of three orangutans per cage.
3. Cage mate compatibility should be determined before transport. Potential cage mates should be allowed to spend approximately 3 hours in cage and monitored throughout to determine compatibility prior to transport.

Release From Cages

1. Individuals to be released should be given sufficient time to recover from transport before being released from transport cages (maximum of 24 hours).
2. Releases should be scheduled for early morning hours to maximize initial monitoring and familiarization.

Media/Visitors

While we understand the need for documentation and media awareness, the following recommendations should be followed at any release:

1. A maximum of two media teams of 3 people each may attend the release.
2. A maximum of 6 outside observers/visitors may attend the release.
3. All visitors should be informed about acceptable behaviour during the release.

Post Release Support

1. Supplementary provisions should be provided at the group release site for a minimum of one month and as long as necessary.
2. All newly released individuals should be monitored continuously for the first week post release, nest to nest. After one week, the situation should be re-evaluated and individuals showing problems should be followed for a minimum of 3 additional weeks. Those continuing to show problems one month after their release should be re-evaluated and an individualized supplemental support plan should be developed.
3. Normal long term monitoring should be in place.
4. Injuries and illnesses should be treated in the release forest as much as possible, rather than returning such individuals to clinic or care centre.

Forest Post Management/Security

1. Forest posts must be able to manage garbage and security to prevent interference with the readaption process. These are chronic problems, therefore proper security and garbage management must be continually reinforced by project and site managers.
2. One staff member posted in the release forest should be designated as responsible for managing garbage and security.
3. Notwithstanding, all staff and visitors share responsibility for maintaining garbage management and security.

Action List

- **Produce Final Draft of Rehabilitation Guidelines**

A nutritional analysis needs to be done in order to get information to centers regarding how much of each item needs to be included in the diet.

Analysis of infant formulas and introduction of different foods (perhaps using pig formula instead of human?) should be undertaken.

Responsibility: Leif Cocks will be willing to help analyse diet through available computer programmes.

Responsibility: Raffaella will work with Lone in drafting guidelines and translating them into Bahasa Indonesia with Nana, and Susan C. will provide additional help.

- **ARKS/MedARKS**

Computer specs required

Availability of program

Training on program

Recommendation: Each centre designate a person responsible for record keeping, this person will be the contact person for other centers.

Responsibility: Leif will oversee this and provide information on the ARKS/MedARKS programming (to include gibbon rehab centers).

Responsibility: Lone will contact other stations to identify their record keeping person.

- **Body Measurement Chart**

Responsibility: Leif will email body measurement to be reviewed for use as a standard chart.

- **Weight Chart**

Responsibility: Leif will design a weight chart for use as a standard chart.

- **Induction Form**

Should provide:

1. How did the orangutan arrive at the centre?
 - a. Was it a voluntary surrender?
(Why did they surrender orangutan?)
 - b. Was it a confiscation?
(Was it by KSDA/Polisi working independently of centers?)
(Was it by KSDA in conjunction with centers, i.e. flying team or patrol?)
2. Who was the orangutan confiscated from?
 - a. Name of person (if known)
 - b. Pet owner (was he/she an official, middle class, etc.)
 1. (Did they know it was illegal?)
 - c. Trader/poacher
 1. (Who was informant?)
 - d. How much was orangutan sold for/how much was paid?
 - e. Was offender charged/prosecuted?
3. Orangutan information:
 - f. What area was orangutan taken from (or bought from)?
 - g. Where was it confiscated?
 - h. What was it being fed?
 - i. How old is it?
 - j. What kind of environment was it kept in?
 - k. Does it have any peculiar medical conditions, does it have a history of any major illnesses or diseases?

Responsibility: Lone will develop a form from recommendations given at this workshop.

- **Caretaker Health/Protocol**

Responsibility: Raffaella will work with Lone and Nana in translating and producing signs that can be posted in all centers.

- **Cage Standards**

Regarding minimum cage requirements.

Responsibility: Leif will provide current formulas used as zoo standards for centers to review and modify to be workable in rehab centers

- **Funding from Zoos**

Letter to ministry suggesting the 1,000 USD annual fee for CITES

Responsibility: Pak Jito with support from Leif
Orangutan Conservation and Reintroduction Workshop
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- **Law Enforcement**

Responsibility: Pak Sugardjito / Sub-action: finding funding for licensing of patrols: Barbara Shaw.

Working Group Participants: Anne Russon, Ashley Leiman, Leif Cocks, Barb Shaw, Andrea Birkby, Colin Groves, Sugardjito, DRH I Gede Nyoman Bayu W, Norm Rosen, Riswan Bangun, Carel van Schaik, Rebecca Wadler, Susan Cheyne, Lone Droscher-Nielsen, Raffaella Commitante, Ian Singleton

Appendix 1 for the Rehabilitation and Reintroduction Working Group: Proposed Guidelines for Caring for the Individual Rights of Orangutans being Rehabilitated

The Effect of Reintroduction

Releasing orang utans into the wild may compromise the well being of an individual. They will be exposed to risks which are absent in captivity. The reintroduction of an individual orang utan, must meet the following criteria:

- The risk to an individual could be considered as reasonably offset up a long-term increase in welfare from being freed from captivity.
- There are good reasons for believing that a viable population can be established from the reintroduction project.

General Principles

All conscious living creatures are seeking to gain pleasure and satisfy desires through living. They also continually seek to avoid suffering. One of the strongest desires is to live. Therefore:

- The unnecessary restriction of an orang utan's ability to fulfil its desires could be considered an abuse of its rights.
- The unnecessary infliction of suffering on an orang utan could be considered an abuse of its rights.
- The unnecessary termination of an orang utan's life, denying the orang utan's fundamental desire to live and the negating any possible fulfilment of all other desires, could be considered an abuse of its rights.

The Case for Making Decisions on Behalf of a Conscious Being without Consent

Although orang utans (*Pongo pygmaeus* and *Pongo abelii*) should be considered to have the same fundamental rights as humans (*Homo sapien*), due to our inability to effectively interpret their wishes, a degree of paternalism is justified (ie. To make decisions on their behalf without consent). The most appropriate method would be to use appropriately qualified professionals to make informed decisions about their future, in the role of a 'guardian', similar to the system used with *Homo sapiens* that are unable to communicate their wishes.

It is up to the qualified guardian to determine the balance between:

- The current suffering caused by the restriction of both movement and fulfilment of desires brought about by captivity.
- The potential future suffering through the process of rehabilitation.
- The reasonable expectations that after rehabilitation the orang utan, on balance, will lead a fulfilling life relatively free form suffering.
- The relative value of the reintroduction for the orang utan species.

Appropriately Qualified ‘Guardians’

The following skills should be considered necessary in a suitably qualified person(s), which is able to make the best decision possible for the welfare of the individual orang utan:

- Knowledge of the orang utan species.
- Knowledge of the physical health and mental health of the individual.
- Knowledge of the potential impact of the various management-options on the individual.
- Knowledge of the impact of the various management-options on the welfare of the orang utan species as a whole.

Management Options

Based on the assessment of physical and mental health of the orang utan, the guardian should enter the orang utan into one of the following programs:

- A reintroduction process aimed at total rehabilitation to wild living.
- A sanctuary situation where the animal is given low level support to maintain a semi-wild existence.
- Enter a suitable captive-breeding program where intensive care can be administered.
- Euthanasia

Orangutan Conservation and Reintroduction Workshop

19-22 June 2002

Palangka Raya, Kalimantan
Indonesia

FINAL REPORT

Section 3

VETERINARY ISSUES WORKING GROUP REPORT

Veterinary Working Group Report

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Appendix 1

Decree by Minister of Forestry Number: 280/KPTS-11/95

Appendix 2

Keputusan Menteri Kehutanan Nomor: 280/KPTS-11/95
Bahasa Indonesia interpretation

Orangutan Conservation and Reintroduction Workshop

Final Report

August 2002

1.0 Introduction

1.1 Background to this Report

This International Workshop was held as a follow-up to the previous International Workshop on Orangutan Reintroduction and Protection, held in Balikpapan, East Kalimantan in June 2001. At the Balikpapan Workshop, the Veterinary Working Group considered a number of important health, management and genetic issues associated with the Reintroduction and Protection processes. The group considered, updated and revised previous Veterinary Medical Procedures for Quarantine and Reintroduction which had been formulated in 1994. As a result, 22 recommendations of the Veterinary Working Group were put forward in the final report of the Balikpapan Workshop.

The follow-up workshop in June 2002 at Palangka Raya was held to determine what recommendations have been implemented over the last 12 months and what are the critical issues which still need to be implemented; what are the impediments to implementation; and what are the solutions to such impediments? Implementation of the workshop recommendations is now considered urgent in view of the crisis in orangutan conservation due to the rapid escalation of negative pressures, notably habitat destruction through increased logging of forests.

1.2 Meeting of Komisi Dokter Hewan untuk Orangutan (Committee of Veterinarians for Orangutans)

It was decided that meeting of the Veterinary Working Group gathered for the International Workshop in Palangka Raya would also include the inaugural meeting of the Committee of Veterinarians for Orangutans, the formation of which was proposed under Recommendations 20 and 21 of the final report of the workshop held in Balikpapan in June 2001. This would allow discussion of technical problems and exchange of ideas and information, much of which is presented in the body of this report.

1.3 Membership of the Veterinary Working Group

Apologies: Dr Dondin Sajuthi
Primate Research Centre
Bogor Agricultural University (I.P.B.)

Attendees: (alphabetical order by Family name)
Andriansyah
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Friends of the National Park Foundation
Tanjung Puting National Park

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Composition of Group

The group comprised a majority of Indonesian Veterinarians. All Rehabilitation Centers in Borneo and Sumatra were represented. The disciplines represented ranged from genetics and disease testing laboratories to overseas and local clinicians and researchers.

2.0 Process

2.1 Tasks Ahead

The following tasks were undertaken as steps in identifying recommendations that have or have not been implemented since June 2001.

- Update the situation
- Review recommendations and actions
- Identify what has been implemented (what, how, when, where, why and why not?)
- Identify impediments to implementation
- Identify solutions to enhance implementation
- Revise priority actions to increase implementations
- Develop updated recommendations reflecting new issues

It was decided that discussions would be conducted in both English and Bahasa Indonesia, with summaries translated into either language at regular intervals as required.

2.2 Update of Current (2001) Recommendations

The Working Group could not identify any recent developments in new knowledge or technology necessitating changes or additions to the Recommendations accepted in the final report of the Balikpapan Workshop in June 2001. The protocols were considered adequate, relevant and workable.

The Group was unanimous in endorsement of the existing recommendations as presented in 2001.

2.3 Review of Recommendations and Implementation

Each member of the group in turn, presented a summary of what has been implemented in the last 12 months in their respective areas of responsibilities. It became clear that all Rehabilitation Centers have made considerable progress in implementing disease testing protocols (especially for tuberculosis and Hepatitis B) as well as improvements in diagnostic methods, submission of samples, parasite control and Staff Health and Protection methods.

Implementation has been facilitated not only by enthusiastic veterinarians, but also the thorough provision of support, such as new equipment and better, modern physical facilities. The Care Centre at Pangkalan

Bun now has an Isoflurane gas anaesthetic machine, an X-ray machine and Clinical Pathology laboratory equipment. The impressive new facilities at Nyaru Menteng and the new Centre under construction in Sumatra will do much to assist the implementation of Health and Management protocols for both orangutans and staff.

2.4 Impediments to Implementation

The group identified a number of factors that prevented full implementation of the recommendations. Most of these were of a technical nature and it is pleasing to report that all were solved during the course of the workshop. The following impediments are presented, together with the proposed solutions.

2.4.1 Availability of PCR test to distinguish HBV (Human Hepatitis B virus) from OHV (Orangutan Hepadnavirus).

Dr. Erni Sulasiawati confirmed that the RFLP test is now available through Dr. Sajuthi's laboratory at IPB. Veterinarians should contact the laboratory to determine the lab's requirements for submission and transport of serum samples, with details of history required.

2.4.2 Intradermal Tuberculin Testing.

It was reported that MOT (Mammalian Old Tuberculin) manufactured in China, was available, but results appeared unsatisfactory. The recognised variable nature of the test was discussed, and it was suggested that perseverance was necessary using either MOT or Bovine PPD Tuberculin (Not Human PPD) intradermally. Availability and supply should be discussed with Dr. Sajuthi at IPB, who has offered, and already has supplied, tuberculins on request. Further research on TB testing is proposed, which hopefully will lead to the development of a more accurate blood test, especially for orangutans, in which non specific reactions to the skin test are a special problem in this species of primate.

2.4.3 Collection and Testing of Tracheal Wash Samples for Tuberculosis.

The favoured method of collection is by flushing 3-5 mls sterile saline down fine tracheal wash tubing and drawing back as much as can be recovered. Disposable tubes should be used for each animal to prevent cross contamination. Short lengths of disposable plastic tubing can be used as an endotracheal tube through which can be passed the fine tracheal wash tubing. This helps prevent contamination of samples due to over-growth organisms in the mouth. This becomes a problem if pharyngeal swabbing is used instead of tracheal wash. Culture of tracheal wash samples and PCR identification for TB can be done at RSCM – Human Hospital (Eijkman Laboratory, Jakarta). Also Biopharma, Bandung can do PCR (Rp.100,000 per sample) as well as culture. It is recommended to contact the laboratories in advance to check requirements for collection preparation and transport of samples.

2.4.4 Identification of Source of Origin of Confiscated Orangutans.

Dr. Toshinao Okayamo indicated that the PCR test to distinguish Sumatran from Bornean orangutans can be provided free of charge (for the next 12 months) at the Biodiversity Conservation Project Laboratory in Jakarta. Samples required can be either whole blood or plucked hair samples with follicles attached, placed into a cliplock plastic bag or in a sample bottle in alcohol. Gloves should be worn when collecting samples to avoid DNA contamination. The laboratory should be contacted in advance to confirm collection and transport requirements and history and identification requirements. There was consensus that identification at the Bornean sub-population level was not necessary (see Recommendations 14, 15 & 16).

2.4.5 Emerging Diseases

The pathology laboratory at Pusat Studi Satwa Primata, IPB, reported the increasing presence of bronchopneumonia on histopathology, possibly related to other diseases caused by *Klebsiella*, *Pseudomonas*, *Campylobacter* or Adenovirus. Veterinarians were encouraged to take diagnostic steps to identify emerging diseases, particularly by the submission of tissue samples in formalin for histology and sterile swabs of fresh tissues for microbiological culture and identification. Antibiotic sensitivity tests should be done on microbiological cultures in order to determine the antibiotics most suitable for successful treatment. It was suggested that if the Pathology laboratory at IPB produced a report in the form of a newsletter, listing the range of diagnoses made at necropsy of primates, this would be a helpful resource if made available to veterinarians at Rehabilitation Centers.

2.4.6 Transportation of Samples

Transportation of samples, such as histopathology specimens, microbiological swabs, serum and blood for laboratory examination in Jakarta and elsewhere, was raised as a significant problem for persons working in remote areas. Although this is not an easy problem to solve, suggestions included passenger or cargo carriage of samples by air or use of commercial couriers such as DHL or Fedex. Discussions should be held with the various laboratories likely to be used, since the laboratories may have preferred methods of transport. It is also important to follow packaging regulations for the transport of potentially infectious material and aircraft transport of hazardous chemicals, diluents and preservatives.

2.4.7 Other Topics

Other clinical topics were discussed by the group throughout the workshop. Detailed discussions will not be reported here. The topics ranged from suitable drugs for the treatment of enteric organisms; control of parasites in the environment: identification, differentiation and treatment of protozoal diseases. Questions raised about the availability and sources of Ivermectin anthelmintic for use in humans and orangutans will be answered by email (Warren & Swan).

2.5 Human and Orangutan Health Matters

The importance of the need to have protocols for the protection of the health of both humans and orangutans through the transmission of anthroozoonotic diseases, was raised by various groups at the Workshop and strongly supported by the Veterinary Working Group.

In the final report of the 2001 Workshop, recommendations were made in the Veterinary Working Group Report (*page 48, Item 7. Staff Health Matters; Item 8. Tourists and Visitors*) and were endorsed once again at Palangka Raya in 2002.

The recommendations are reproduced below.

2.5.1 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 of 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 in safe working methods for handling or working with Orangutans, and on the use of protective procedures to prevent the spread of zoonotic diseases, such as gloves and face masks.

2.5.2 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.

2.6 Translation of the Veterinary Report and its Recommendations

The group unanimously supported the suggestion that the recommendations of the Veterinary Working Group be translated into Bahasa Indonesia.

Dr. Erni Sulistiawati and Dr. Wardy Paembenan volunteered to translate the recommendations and with the help of all Indonesian veterinarians present, the document was translated during the course of the Workshop (attached).

It was agreed also that the whole of the Veterinary Report should be translated, and Dr. Erni Sulistiawati has offered to translate the whole document from the final English version of the report. This will also require a further small amount of translation into the Bahasa Indonesia version of the recommendations, due to consequential changes as a result of the Workshop.

2.7 Steering Committee Nominations

Workshop participants decided that in order to keep the momentum going, an advisory standing committee should be formed in close liaison with IUCN. Pak Sugardjito agreed to chair such a committee.

A Steering Committee is to be formed to establish the Advisory Committee (suggested name is Orangutan Conservation Forum) and two nominees were called for from each working group at the Workshop. The nominees for the temporary Steering Committee (who will mainly work via email contact) from the Veterinary Groups are Dr. Citrakasih M Nente (Wanariset Orangutan Reintroduction Project) and Dr. Kristin Warren (Murdoch University, Perth, Australia).

3.0 Other Issues

3.1 Contraception in Female Orangutans

The Veterinary Group was asked for its recommendation on the use of chemical contraception in female orangutans to prevent unwanted pregnancies, especially in young females. Discussion centred around the difficulties in preventing conceptions at an early age, the consequences of early pregnancies and the specific need for prevention of pregnancies in certain adult orangutans.

The group arrived at a consensus as follows:

Breeding of orangutans in Rehabilitation Centers is not recommended. The wide-spread and long-term routine use of chemical contraceptives is regarded as an unnecessary and potentially harmful interference.

The use of husbandry and management methods to avoid contact between sexes is preferred. In special, individual cases, contraceptives should be used only if prescribed by a veterinarian.

3.2 *Euthanasia*

The Veterinary Working Group joined with the Rehabilitation and Reintroduction Group to resolve a problem concerning the recommendation that orangutans with incurable cases of active tuberculosis be humanely euthanized on the grounds of pain, suffering and declining quality of life. One objection related to the use of the word “euthanasia”, which was regarded as harsh. The other objection related to moral issues, including the inalienable right to life for orangutans.

The Veterinary Working Group explained the serious nature of tuberculosis and the risks associated with disease transmission to other orangutans and human staff, as well as the world-wide concern about emerging multiple drug resistant strains of tuberculosis bacteria. The Veterinary Working Group was unanimous in endorsing the Veterinary Recommendations and unanimous about the responsibility of veterinarians to humanely euthanize orangutans that suffer active tuberculosis, to prevent disease transmission and alleviate suffering.

After considerable discussion, with due respect for differences in opinions, consensus was reached, with release of the following statement:

“Respecting current opinion that Great Apes have inalienable rights to life and recognising the great risks associated with disease transmission to other orangutans and human staff, we nonetheless have a responsibility to alleviate suffering by terminating life.”

3.3 *Release Sites*

The Veterinary Group met with the Reintroduction group to reach a compromise on the unanimous reaffirmation of the Veterinary Group first Recommendation at the 2001 Workshop in Balikpapan, which reads:

“1. Orangutans must be reintroduced into suitable habitat that does not contain, and is geographically isolated from, wild orangutan populations.”

This recommendation is in agreement with the Ministry of Forestry Decree concerning reintroduction of orangutans into natural habitat (Numbers 280/KPTS -11/95 – see Appendices 1 and 2 attached), which reads:

“Third C. It should be established that the area of forest does not have a wild population of orangutans or connect to another region that has wild orangutans.”

After lengthy discussion, agreement was reached on the following recommendation for selection of release sites. This modified recommendation will replace Recommendation 1 by the Veterinary Working Group in the 2001, IUCN Final Report.

3.3.1 Release Sites (New Recommendation)

Successful reintroduction is the ultimate aim of the rehabilitation process. It is therefore a critical component. There are many potential risks and benefits involved in the selection of release sites. They need to be carefully evaluated and weighted in order to find the optimal solution. Because of incompatibilities or practical problems, the ideal reintroduction site is not always available. Hence, compromises may be necessary. The following formulates the ideal reintroduction site and then suggests two compromises. The first compromise is preferred over the second, because of the possible ecological impacts of reintroduced orangutans on other endangered species, plant and animal, and because of the risk that reintroduced orangutans introduce non-endemic diseases to other species in the area.

1. Acceptable scenarios for reintroduction sites are ranked in decreasing order of preference, as follows. These scenarios are consistent with current IUCN primate reintroduction guidelines.

Plan A (Ideal):

- a. Suitable habitat
- b. Within the current range
- c. No wild orangutans
- d. Isolated from existing populations

We recognise that this ideal situation is rarely feasible so compromises are necessary. However, because of the risk of disease introduction, geographic isolation remains an essential feature. It is recognised that the situations in Borneo and Sumatra differ significantly.

Plan B (First compromise – preferred)

- a. Suitable habitat
- b. Within the current range
- c. Quite small wild populations (e.g., <50 individuals and/or density $\leq 0.1/\text{km}^2$)
- d. Geographically isolated from existing populations (could create artificial barriers)
- e. Demonstrably well below carrying capacity.

Plan C (Second compromise)

- a. Same as Plan B, except areas outside the current and within the historical range

(Note: there is debate about the definition of “historical range”; in this discussion, it means the range, occupied by orangutans based on written historical records).

2. Good ecological studies of carrying capacity are required to support site assessment and selection of sites.
3. Prospective sites should be professionally assessed through field surveys for:
 - a. Wild orangutan presence, distribution, and density
 - b. Floral and faunal survey (fruit and permanent foods; other sensitive species)
 - c. Forest fragment size
 - d. Dispersal barriers (existing and potential)
 - e. Site security
 - f. Political considerations (e.g., where possible, within political units)
 - g. Potential for human-orangutan conflict
 - h. Potential for enhanced conservation status.
4. Final site selection should be subject to discussion at a workshop of orangutan and other relevant experts. The workshop should be preceded by these field surveys.

4.0 Recommendations from the Veterinary Working Group

1. Selection of Release Sites Successful reintroduction is the ultimate aim of the rehabilitation process. It is therefore a critical component. There are many potential risks and benefits involved in the selection of release sites. They need to be carefully evaluated and weighted in order to find the optimal solution. Because of incompatibilities or practical problems, the ideal reintroduction site is not always available. Hence, compromises may be necessary. The following formulates the ideal reintroduction site and then suggests two compromises. The first compromise is preferred over the second, because of the possible ecological impacts of reintroduced orangutans on other endangered species, plant and animal, and because of the risk that reintroduced orangutans introduce non-endemic diseases to other species in the area.

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- We recognise that this ideal situation is rarely feasible so compromises are necessary. However, because of the risk of disease introduction, geographic isolation remains an essential feature. It is recognised that the situations in Borneo and Sumatra differ significantly.

Plan B (First compromise – preferred)

- Suitable habitat
- Within the current range
- Quite small wild populations (e.g., <50 individuals and/or density $\leq 0.1/\text{km}^2$)
- Geographically isolated from existing populations (could create artificial barriers)
- Demonstrably well below carrying capacity.

Plan C (Second compromise)

- Same as Plan B, except areas outside the current and within the historical range

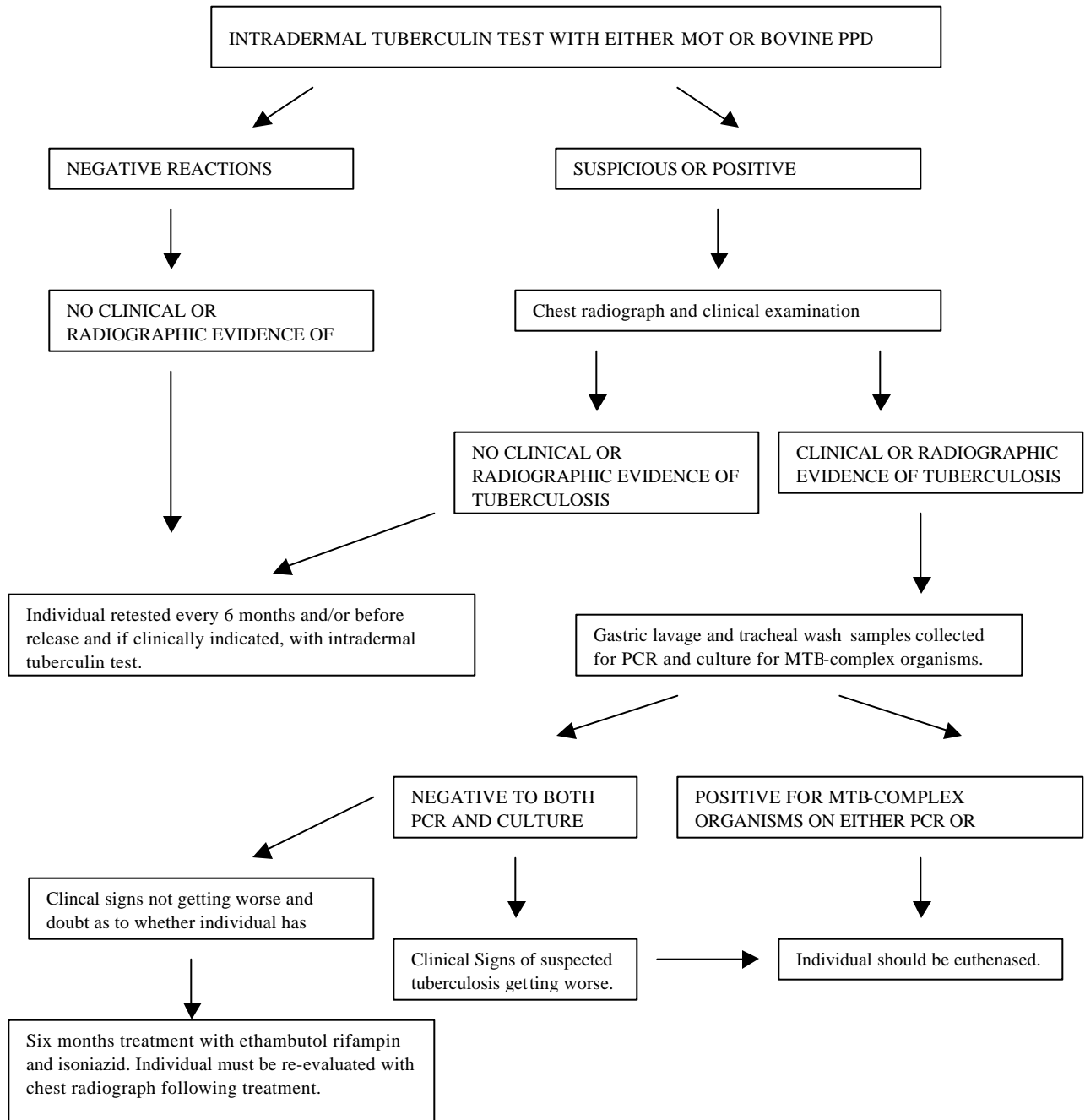
(Note: there is doubt about the historical range; in this discussion, it means the range, occupied by orangutans based on written historical records).

- Good ecological studies of carrying capacity are required to support site assessment and selection of sites.
 - Prospective sites should be professionally assessed through field surveys for:-
 - Wild orangutan presence, distribution, and density
 - Suitability of flora and fauna (fruit and permanent foods; other sensitive species)
 - Forest fragment size
 - Dispersal barriers (existing and potential)
 - Site security
 - Political considerations (e.g., where possible, within political units)
 - Potential for human-orangutan conflict
 - Potential for enhanced conservation status.
 - Final site selection will be subject to discussion at a workshop of orangutan and other relevant experts. The workshop should be preceded by these field surveys.
2. All orangutans arriving at rehabilitation centers 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 physical and psychological (including behavioural) wellbeing 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 the animal's origin if known.

4. The orangutans will be placed in separately housed quarters of sufficient space, with appropriate ventilation and provision of water. Wastewater 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, and hence island, 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 euthanized. 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 euthanized. If the individual is still negative to both tests and the clinical signs of suspected tuberculosis are getting worse then the individual should be euthanized. 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. See Diagram 1.

Diagram 1: Protocol for tuberculosis testing during quarantine



- Given the current poor knowledge of diseases affecting ex-captive and wild orangutans in particular, the use of vaccines in orangutans in Reintroduction centers is not recommended.

10. All animals that die during or following the quarantine period will undergo a full necropsy and Histopathological examination. No animals in contact with an individual that 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 fecal 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.
16. Wild individual orangutans, that are not brought into rehabilitation centers 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.
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 include all quarantine and health 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.

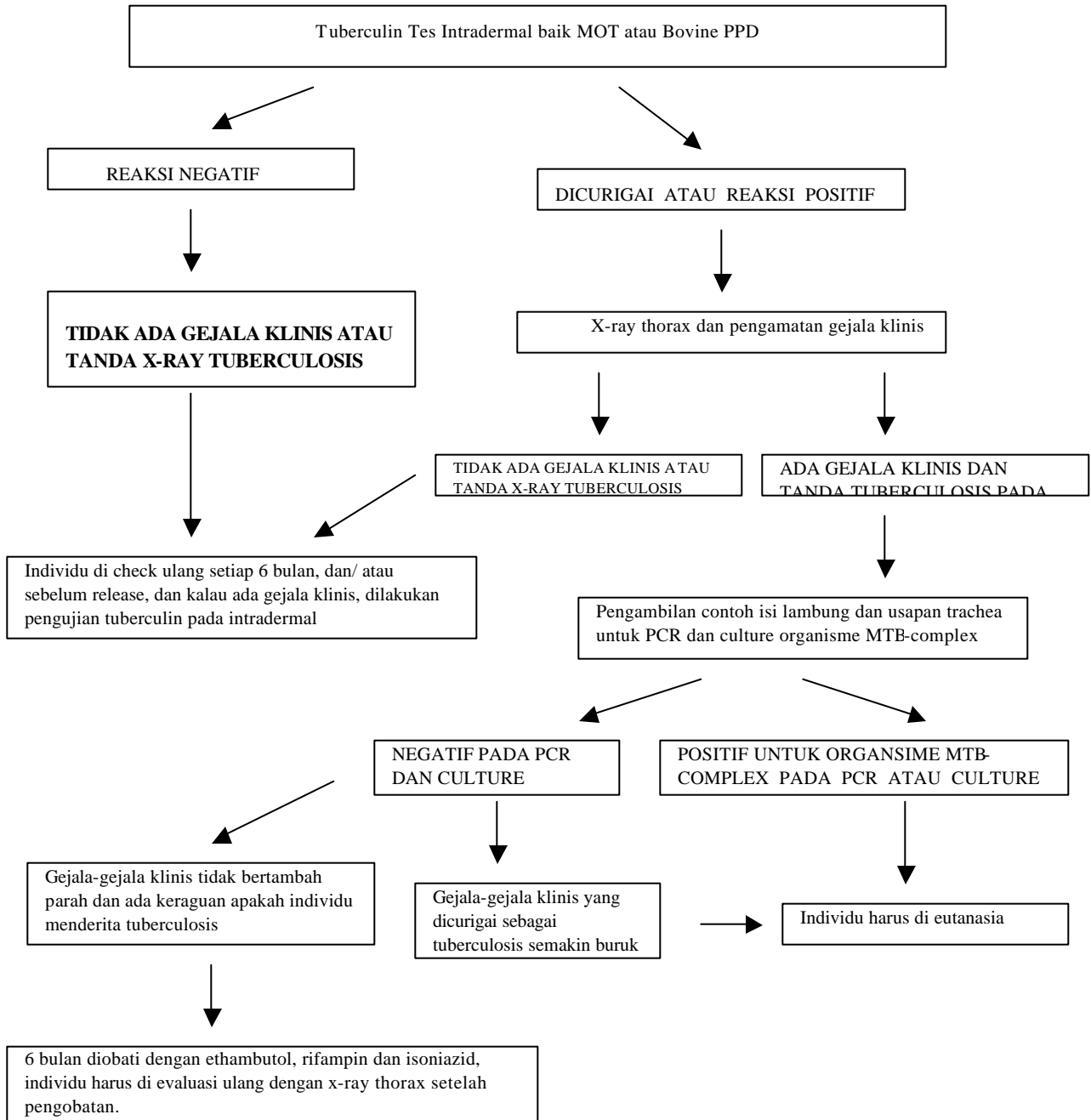
20. All quarantine facilities, daily procedures and routines, and staff management procedures should meet standards of primate quarantine and handling accepted internationally and as recommended by the *Komisi Doktor Hewan untuk Orangutan* (Committee of Veterinarians for Orangutans). These standards 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 be forwarded by IUCN to the Department of Forestry of the Republic of Indonesia for approval and implementation.

4.0 Rekomendasi Komisi Dokter Hewan Untuk Orangutan

1. Orangutan harus dikembalikan ke habitat yang sesuai, -secara historis merupakan jelajahan orangutan-, yang tidak dihuni dan secara geografis terisolasi dari populasi orangutan liar.
2. Semua orangutan yang datang pada pusat rehabilitasi harus menjalani masa karantina minimal selama tiga minggu sampai semua hasil test kesehatan menunjukkan hasil negatif. Orangutan yang secara klinis sakit ditunjang hasil test kesehatan yang memberikan hasil positif, maka individu tersebut akan menjalani perpanjangan masa karantina untuk penyelidikan lebih lanjut. Orangutan yang menjalani masa isolasi harus diperhatikan masalah psikologi dan tingkah lakunya. Orangutan yang tiba dalam satu kelompok dapat disatukan dalam satu kandang selama masa karantina.
3. Pihak pemerintah dalam hal ini PHKA sebelum melakukan penyitaan orangutan harus memiliki informasi sebanyak-banyaknya tentang orangutan tersebut. Pada saat melakukan penyitaan sangat perlu untuk mengetahui secara rinci tentang sejarah orangutan seperti makanannya, kebiasaan-kebiasaannya, tingkah laku tertentu dsb. Perlu ditekankan untuk mencatat lokasi penyitaan orangutan dan daerah asli dari orangutan tersebut.
4. Orangutan harus ditempatkan dalam kandang yang ideal dimana tersedia makanan, air, dan ventilasi yang cukup. Limbah dari seluruh fasilitas hewan harus disalurkan ke tangki yang dilengkapi dengan filter. Bangkai orangutan yang telah dilakukan pemeriksaan post-mortum harus dimusnahkan dengan incinerator atau dikubur dalam-dalam.
5. Orangutan yang baru datang harus mendapatkan pemeriksaan fisik yang lengkap dan mendapatkan mikrochip sebagai penanda yang dipasang secara subkutan pada medial skapula kiri. Sampel rambut diperoleh secara steril untuk pemeriksaan genetik dengan tujuan memastikan asal orangutan.
6. Semua orangutan selama masa karantina harus diambil sampel darah untuk pemeriksaan hitung darah, test hepatitis, dan kebutuhan bank serum dalam bentuk serum beku.
7. Semua orangutan yang baru masuk harus dilakukan uji serologis terhadap HBsAg dan HBsAb. Individu yang menunjukkan hasil positif terhadap HBsAg di uji lebih lanjut dengan PCR-RFLP untuk membedakan Orangutan Hepadna Virus (OHV) atau Hepatitis B Virus (HBV). Orangutan yang terinfeksi OHV dapat mengikuti tahap karantina selanjutnya dan proses rehabilitasi. Individu yang negatif terhadap HBsAg tidak perlu dipertahankan di karantina tetapi duji ulang terhadap HBsAg 6 bulan setelah kedatangan.
8. Orangutan selama masa karantina dilakukan intradermal tuberkulin tes dengan MOT atau Bovine PPD pada tempat yang direkomendasikan (intrapalpebra). Jika tuberkulin tes negatif atau ada indikasi secara klinis, maka dilakukan tes ulang setiap 6 bulan dan atau sebelum dilepaskan. Jika individu menunjukkan reaksi positif atau dicurigai maka dilakukan pemeriksaan klinis dan rontgen thorax. Jika TBC terbukti ada baik secara klinis atau rontgen thorax maka dilanjutkan dengan pemeriksaan PCR dan kultur media terhadap cairan lambung dan *tracheal wash* untuk mengetahui MTB-complex. Jika salah satu dari tes tersebut positif maka orangutan yang bersangkutan harus dietanasi. Jika kedua tes tersebut negatif tapi secara klinis kondisi orangutan semakin memburuk tetap dilakukan etanasi. Jika secara klinis kondisi orangutan tidak memburuk, individu tersebut harus menjalani pengobatan selama 6 bulan dengan ethambutol, rifampicin dan

isoniazid. Individu tersebut juga harus dievaluasi ulang dengan rontgen thorax selama masa pengobatan. Lihat Diagram 1.

Diagram 1: Protokol pemeriksaan Tuberkulosis selama karantina



9. Sedikitnya pengetahuan dan informasi terbaru tentang penyakit yang menyerang orangutan *ex-captive* dan orangutan liar khususnya, maka pemakaian vaksin pada pusat reintroduksi tidak direkomendasikan.
10. Semua orangutan yang mati selama masa karantina harus dilakukan nekropsi lengkap dan dilanjutkan dengan pemeriksaan histopatologi. Tidak ada orangutan yang pernah kontak dengan individu yang mati yang diperbolehkan untuk bebas dari karantina selama penyebab kematiannya belum diketahui pasti. Semua perubahan abnormal yang ditemukan dilaporkan secara tertulis oleh patologis untuk mempermudah pengawasan prosedur karantina.
11. Semua individu yang baru datang harus menjalani pemeriksaan feses terhadap infestasi parasit gastrointestinal dan diobati sesuai dengan hasil pemeriksaan yang diperoleh. Individu tersebut diberikan antelmentik yang berbeda setiap 3 bulan, demikian juga dengan individu yang menunjukkan gejala klinik perlu diobati. Sebelum dilepaskan dilakukan pemeriksaan feses, apabila menunjukkan hasil positif harus diikuti dengan pengobatan lengkap yang harus selesai dalam waktu 24-48 jam sebelum dilepas, untuk mengurangi kemungkinan reinfeksi sebelum pelepasan.
12. Tes diagnostik untuk penyakit lain (*Salmonella*, *Shigella*, *Campylobacter*, *Klebsiella*) bersifat pilihan tergantung pada adanya gejala klinis yang spesifik.
13. Uji lanjut terhadap HAV dan HCV dapat dilakukankan jika dianggap perlu, tergantung kondisi klinis orangutan tersebut.
14. Analisis genetika untuk indentifikasi species dilakukan pada semua orangutan sebelum pelepasan. Individu yang telah diidentifikasi dengan analisis genetik sebagai orangutan Sumatra atau Kalimantan harus direintroduksi di daerah asal mereka.
15. Adanya populasi yang besar dari orangutan “rehabilitant”, yang membuat orangutan Kalimantan yang secara geografis berasal dari daerah yang berbeda menjadi tercampur pada hutan pelepasan, dapat dipertimbangkan/dimungkinkan sebagai pemecahan masalah manajemen yang terbaik untuk pelepasan orangutan rehabilitan.
16. Orangutan liar, yang tidak dibawa ke pusat rehabilitasi tetapi ditranslokasikan dari satu tempat ke tempat lain (karena perladangan, kebakaran, dll.) sebaiknya tidak ditranslokasikan ke daerah yang secara geografis berbeda, selain daerah asal mereka. Translokasi tidak boleh dilakukan tanpa melalui uji kelayakan dampak translokasi terhadap populasi orangutan yang sudah ada sebelumnya pada daerah tujuan.
17. Pendataan yang lengkap dari waktu ke waktu harus disimpan untuk memudahkan penelusuran dan kontrol terhadap penyakit orangutan dan pengobatannya serta untuk memudahkan pembuatan laporan. Laporan rutin perlu dibuat untuk memudahkan pengawasan, dan salinan dari semua laporan dan data-data disimpan pada satu tempat tertentu.
18. Pelatihan dan pemeriksaan kesehatan untuk staf karantina harus diprioritaskan. Staf yang sakit tidak diijinkan untuk bekerja dengan orangutan. Data yang akurat dari setiap pemeriksaan akan sangat menolong untuk penelusuran kasus-kasus zoonosis.
19. Pada setiap fasilitas karantina orangutan harus tersedia panduan yang berisi semua prosedur pelaksanaan (SOP) karantina termasuk prosedur untuk staf. Perubahan panduan atau prosedur ini harus disampaikan ke Departemen Kehutanan.

20. Semua fasilitas karantina, kegiatan rutin dan prosedur manajemen staf harus sesuai dengan standar penanganan dan karantina primata yang diterima secara internasional dan sesuai rekomendasi dari Komisi Dokter Hewan Untuk Orangutan. Perlu disediakan fasilitas yang dapat mendukung pelaksanaan standar karantina dan rehabilitasi orangutan seperti tersebut diatas.
21. Komisi Dokter Hewan untuk Orangutan berada di bawah Aliansi Konservasi dan Rehabilitasi Orangutan. Komisi ini bertemu secara berkala untuk mendiskusikan isu-isu terbaru dibidang medis yang berkaitan dengan konservasi orangutan. Komisi Dokter Hewan Untuk Orangutan pada awalnya beranggotakan para dokter hewan yang terlibat dalam kelompok kerja dokter hewan pada workshop IUCN dan sepengetahuan IUCN/CBSG dan Departemen Kehutanan RI.
22. Rekomendasi ini harus diteruskan oleh IUCN ke Departemen Kehutanan RI untuk dilaksanakan.

Appendix 1 for Veterinary Working Group

DECREE BY MINISTER OF FORESTRY NUMBER: 280/KPTS-II/95

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

- First: Creation of new regulations regarding Rehabilitation of Orangutan (*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 orangutans and habitat factors.
- Third: Rehabilitation of orangutans 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 orangutans or connect to another region that has wild orangutans.
 - d.) Identification of genetic type and origin of orangutans
- 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)

Appendix 2 for Veterinary Working Group

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

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

Menetapkan:

Pertama: Menetapkan Pedoman Rehabilitasi Orangutan (*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 orangutan serta habitat dan daerah jelajah.

Ketiga: Kegiatan rehabilitasi Orangutan (*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 sebagai habitat diusahakan yang sebelumnya tidak terdapat orangutan dan tidak menyambung dengan kawasan yang sudah ada populasi orangutan.
- d.) Identifikasi 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 orangutan dilakukan setiap priode tertentu (setiap akhir tahun).

Source: Suryohadikusomo, D (1995). Keputusan Menteri Kehutanan.
Nomor: 280/Kpts – II/95, Departemen Kehutanan, Jakarta

Orangutan Conservation and Reintroduction Workshop

19-22 June 2002

Palangka Raya, Kalimantan
Indonesia

FINAL REPORT

Section 4

HABITAT AND SPECIES PROTECTION/ SOCIOECONOMICS AND GOVERNANCE

WORKING GROUP REPORT

Habitat and Species Conservation Working Group

Update of the Issues Considered in Balikpapan 2001

A summary of the major issues and developments over the past year is given below.

1. Habitat Loss and Destruction

This continues to occur at a great pace, by way of illegal logging, fire, encroachment, plantation building and mining.

- Plantations are diversifying with not only oil palm, but also with acacia plantations threatening orangutan habitat.
- Mining is becoming a major threat with the Ministry of Mining purportedly pushing to get mining rights within National Parks. The Ministry of Forestry is currently resisting this. Coal mining is starting to threaten some important forest areas, e.g. the Barito Ulu Conservation Area in Central Kalimantan.
- Many populations have been fragmented and isolated and there are now considerably more than 100 forest fragments with orangutan populations presumably below viable levels. There are no clear ideas of what to do about these populations (see recommendation F1) although the promotion of agro-forestry to fill-in some of the cleared areas between populations has been muted.
- Fires are continuing, with 1,825 hotspots recorded in Sumatra and Kalimantan during the first half of 2002. The El Nino weather phenomenon is forecast to return in 2002.
- Governments in the region are tackling the fire problem from the 'haze' perspective, with inter-governmental agreements to fight this perhaps leading to action on the ground.

2. Law Enforcement

- There is international support for the big players in illegal logging, therefore to fight it we need as much NGO support as possible. Within the Berau region, TNC and the district Bupati have signed an MOU to fight illegal logging.
- Amendments to the Forestry Act are currently being considered in parliament, to provide increased incentives, both financial and status-linked, to effective law enforcers.
- The United Kingdom and Japan have signed separate MOU's with Indonesia on improving forest protection.
- Other laws have been signed by the President relating to forest protection but we do not have enough supporting information - see recommendation G3.

- The Ministry of Forestry has assigned extra money for law enforcement to certain National Parks.
- The Director General (dirjen) of the PHKA has supported tree spiking in certain areas.
- Overall – law enforcement is still not being carried out properly and the situation continues to deteriorate.

*Post-conference, on July 5 2002, the State Minister for the Environment announced that an ‘untouchable’ team of law enforcers would be established to handle crimes that damaged the environment, especially those involving illegal logging. The team will comprise 12 judges, 12 prosecutors and 12 police personnel and will have the authority to investigate all jurisdictions in the country.

3. Habitat Protection

- Major surveys have been implemented and several major ‘new’ orangutan populations have been identified. BOS is implementing large scale habitat monitoring in Central Kalimantan.
- Some major funding partners have now entered the field with money for habitat protection. These include the CEPF (Critical Ecosystem Partnership Fund) targeting areas in Sumatra; USAID; The US Fish and Wildlife Service (Great Apes Conservation Fund).
- Conservation International (CI) has started the GCF (Global Conservation Fund) which aims to provide monies for purchasing land via local NGOs.
- Local governments are sensitive about water quality and desire to protect forest areas with scientifically based ideas. Targeting buffer zones and watershed areas could be important.
- TNC in Berau approached two HPH’s that contain orangutan populations. They found that those segments of HPH found on steep slopes were not profitable for logging. TNC aims to use these as the core areas for protection and to gain a foothold in the area. Bapeda (Tingkat II) has the authority to claim 40 % slope forest as hutan lindung
- A carbon offset proposal in Aceh by CI failed because of political conditions, but may be a good option elsewhere.
- Overall – the situation continues to deteriorate as orangutan habitat is still being destroyed.

4. Political Will

- There have been major governmental changes since the last workshop, with the inauguration of a new President and the appointment of a largely new cabinet including a new Minister of Forestry. The new staff changes are leading to positive change with a bigger emphasis on conservation.

- There has been an increase in the number of NGO's working for the orangutan and orangutan habitat, with CI and WWF, amongst others, starting major species programs for the orangutan and targeting important areas.
- Some local governments have been providing funds to match funds provided by NGOs for some projects. This also has the benefit of making local government feel responsible for their own area.
- The judicial system still needs more support for conservation efforts.
- More Kabupatens have been created, diluting the capacity of existing funds and knowledge base.
- More pressure and lobbying is needed to raise political will to an acceptable level. This may be possible during the review of the Law No. 5 /1990, the Conservation of Biological Natural Resources and their Ecosystems (the "Biodiversity Conservation Framework Act")

Review of Progress of Recommendations Made in Balikpapan 2001

A series of recommendations were made by the Habitat Protection and Governance Working Groups at the 2001 Orangutan Reintroduction and Protection Workshop. This section outlines these recommendations and discusses the progress made for each recommendation.

Habitat Loss

A: Illegal Logging

Recommendation A1: Mechanical Protection and Devaluation of Trees

Goal: Develop and implement methods 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.

Action Step 1: Investigate new and existing techniques.

This topic was heavily discussed during the 2001 workshop. At the conclusion of the workshop the Gibbon Foundation challenged participants to discover a way to reduce the value of timber without hazardous side effects to humans. Approximately twenty proposals were submitted over the last year, however none were found to be feasible. Four techniques that have been used for devaluing timber were discussed.

The first, which was in equal measure the most popular and the most controversial, is tree-spiking. Two protected areas have employed this method over the past year. Limited success was found at Sungai Wain, although the experiment was designed poorly. A small area was very heavily spiked, including

already felled trees. 18-20 chainsaws were broken by spikes but no one was hurt and the district Bupati was very supportive as the area is important as a water catchment. Within Gunung Palung National Park a small area was spiked with support from the PHKA and the success or otherwise is as yet unknown. However there are still legal issues to be overcome, as put forward by one participant (see dissenting view, Section 1). It was argued that this practice is illegal under both Indonesian law and Islamic law, and people are still putting themselves at risk due to economic constraints. The Indonesian law needs to be changed before this can be successful, however, several participants pointed out that we need to take risks if we are to maintain viable populations.

Secondly, SGS International Certification Systems, Inc. and other companies use bar codes on felled timber. If the log comes to port without a barcode it is known to be illegal, and fines are placed. The local government loses \$10 per log, and it only costs about \$1 to put on the bar code. Thus this approach can be economically successful. Log tracking doesn't require certification, and if transportation is limited all illegal logs will come out of the same port and be easily caught. The ultimate fate of the stopped illegal logs needs to be considered, however.

Thirdly, moratoriums (sales bans) have been placed on certain tree species (i.e. ramin). These moratoriums appear to be ineffective. There is also no proof that lowering the international market price of timber decreases pressure on the forest. Local logging and government leaders may decide to log more to meet their targets. Devaluing a certain species is not an option because they will just change species. The local population is not concerned about the end of logging as they are logging opportunistically and will return to traditional jobs afterwards. A small impact may be made by closing bankrupt timber companies and concessions (on the pulp and paper side). Moratoriums, revocation of concessions and closure of bankrupt companies may have little effect on actual 'on-the-ground' logging and won't stop domestic demand for housing, but 60% of logs are exported so it may affect this market. For example, Malaysia has placed a new ban on import of logs from Indonesia owing to concerns about its own furniture industry. A well-designed study is needed to look at what has actually happened on the ground with these policy issues. Does the closure of concessions or sawmills have a positive effect on the area or not?

Finally, physical barriers were created in the rivers leading out of Tanjung Puting National Park. A negative impact was seen in that the barriers were destroyed, ranger stations burned down and this ate up much of the park department's budget. However a full cost-benefit analysis has not been carried out.

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

Presidential decree has not happened, although support came from the PHKA for both the tree spiking in Gunung Palung and the barriers in Tanjung Puting.

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

Little has been done to date. The bar-coding idea has been offered by SGS but is not currently in practice.

Action Step 4: Media campaign and socialization.

Tree spiking in Gunung Palung has been socialized locally but there has been no wide media campaign.

Recommendation A2: Enforcement of Presidential Decree #5/90A and Forest Regulation #41/99

Goal: 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 Bupatis and the police. Overcoming this lack of cooperation is one of the main obstacles.

This is an old law that participants wished to see implemented. It was considered that there is confusion between the different law enforcement departments about who has overall responsibility for arresting and prosecuting timber thieves.

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

Not yet been done, although it appears that it is ineffective everywhere. A desire was expressed to increase the capacity of forest rangers to the level of police, although corruption is still seen as a major barrier to effective law enforcement. There is also no witness protection law in Indonesia, which further hinders proper enforcement.

Action Step 2: Lobby local government.

Has not happened to date.

Recommendation A3: Recommend that ongoing Dana Alokasi Umum (Special Allocation Funds) for the Bupatis be linked to conservation issues.

Goal: 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.

No progress has been made on this issue. It was suggested that the status of the National Parks be decentralized to come under local rule, so that money can be directly allocated in line with performance on conservation issues. This may also potentially aid prosecution of illegal loggers and poachers as the local courts would then be dealing with local issues rather than with a national level case. However it was strongly put forward that decentralizing National Parks would create a whole new set of problems and thus this is not a recommendation.

Recommendation A4: Establishment of Orangutan Patrol Units modelled after Rhino Patrol Units.

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

Under collaborations with FFI and CI these steps are well in hand and Gunung Palung and Tanjung Puting National Parks seem likely to be the first places where it will be implemented.

Action Step 1: Documentation obtained about Rhino program.

Documentation has been obtained but not distributed.

Action Step 2: Design a protocol for "orangutan patrol units" focused on environment/habitat protection and assessment.

Design has been made by FFI but not yet tested or distributed. CI has been working on a protocol.

Action Step 3: Obtain support of local people.

Will wait for protocols to be finished.

Action Step 4: Obtain funding for program.

Funding obtained from US Fish and Wildlife Service for test study in Gunung Palung and USAID funding for CI at Tanjung Puting.

The US Fish and Wildlife Service would like a forum created in order to produce replicable protocols for ideas like this, and so that sites can engage in contracts of sorts.

Action Step 5: Implement program.

Time frame for implementation of first program at Gunung Palung is around September 2002.

Recommendation A5: Recommend a new government policy. Illegally collected timber should be considered illegal and use should be banned in order to prevent the laundering of illegal timber.

Goal: It is still profitable for illegal logs to be confiscated and re-bought through auction. Some current action is being made by the local authorities by keeping timber on ships and not auctioning it off – thus both the loggers and the shipping companies lose money with the boat tied up and the timber rotting. This action has informal support from the Ministry of Forestry but is only occurring in a number of high profile cases. No formal action has been made on this recommendation.

Action Step 1: Suggest Recommendation by way of Presidential or Legislative decree.

Action Step 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).

Recommendation A6: Present the case for orangutan conservation to local and national parliaments

Goal: Presentations to all local governments that have orangutans in their area and to the National Parliament (DPR). This should be done together with an examination of what will be the convincing arguments on a local level, and good supporting information.

Some progress has been made on this issue through local NGO's such as WWF in the Sebangau; CI in North Sumatra. Little has been done in Central Government.

Recommendation A7: Assess how many people are killed and injured by legal and illegal logging so that information can be used to influence public opinion.

Action Step 1: Suggest research project be carried out.

Not done yet, this remains an interesting research project. No one has yet taken responsibility for this. It has been documented that 30 school children were killed in a traffic accident with logging trucks in Riau last year.

B: Land Use Planning

Recommendation B1: 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.

EIAs are already required by law for large-scale activities, but this is not in action. The law is interpreted very loosely, and there is no legal requirement for content, processing or follow-up. Limitations are cost, local capacities, corruption at the local level. A new Presidential Decree that incorporates Bapedal into LH (Lingkungan Hidup) may give LH more enforcement capacity.

Action Step 1: Obtain a government decree from the president through the Minister of Interior. Minister of forestry can put forth to minister of interior.

Already in law but not in practice

Action Step 2: Obtain support from international community

Recommendation B2: 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.

Kyoto and previous international agreements provide a funding mechanism for carbon offset if a previously cut area is replanted but not if existing forest is maintained. CARE got grant for carbon offset from CCCDF (Canadian Climate Change Development Fund). Pressure should be made to promote protection of peat swamp forest for water conservation and to offset health risks from pollution caused by fire. Peat swamp forest areas are seen as perfect for incentive mechanisms relating to conservation contracts.

Recommendation B3: Lobby local governments to prevent peat swamp forest conversion

Some action has taken place in the Sebangau area and between the Kapuas and Barito rivers (proposed Mawas reserve) in Central Kalimantan by Indonesian NGO's such as WWF, BOS and CIMTROP.

Recommendation B4: Remind local environmental offices to perform Environmental Impact Assessments (EIAs). Possibly on local level by individual groups but no large effort.

Recommendation B5: Develop more explicit instructions for performing EIAs. None as far as we are aware.

Recommendation B6: Identify undesignated habitats and corridors as candidates for conservation areas.

Progress has been made for this recommendation.

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

Eight new key areas have been identified.

1. Seulawah in Aceh. 1.5 million hectares adjacent to Gunung Leuser National Park with orangutan habitat in west and south and some coniferous forest. Not yet presented to MoF.
2. Angkola ~100,000 hectares N. Sumatra. Research and surveys have marked it as a potential release site. Current orangutan population is nil. Not yet presented to MoF.
3. Tapanuli Utara in Sumatra is currently being surveyed. Considered unlikely to harbour any large, viable populations but may have potential for corridors. Not yet presented.

4. Sangkulirang Mankalihat, specifically Gunung Gadjah, in East Kalimantan. 140,000 hectare area near Berau. Has been proposed by TNC to relevant Ministry.
5. Meratus in East Kalimantan. No wild orangutans. Wanariset already releasing into 28,261 hectare area which is protected. 400 already released +150 in cage. Proposal to add 40-60,000 hectare to this.
6. Sebangau in Central Kalimantan. 600,000 hectares of production and limited production forest. Orangutan population believed to be in excess of 5,000. Many partners working here including CIMTROP, WWF, Universities of Nottingham, Leicester and Palangkaraya and OuTrop; funded by the European Union, CIDA, USAID, WWF-Netherlands and WWF-UK.
7. Proposed Mawas reserve, between Barito and Kapuas rivers in Central Kalimantan ~270,000 hectares with an estimated orangutan population of 1,500-2,000. BOS working here, presented to local officials but not to Ministry.
8. Sabah. Several sites have been proposed to Sabah government for protected area status by Kinabatangan Orangutan Conservation Project.

Other updates on unprotected areas:

Gunung Niut has apparently had all animals hunted out. In Danau Sentarum nothing has been followed up since surveys in 1999 suggested ~2000 individuals outside of the park in proposed extensions.

Recommendation B7: 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 regulations on land-use and development planning procedures.

Several donors in many regions have been doing this, including around the Berau and Gunung Palung areas. They are not specifically focused on orangutans but achieve the same effect.

Recommendation B8: Realizing the importance of natural forests as a life 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.

Local governments in important orangutan areas have been approached by several NGO's to consider the wider conservation picture, for example the area may be important for water catchment, or for fire prevention. Examples of this include the TNC project in Berau and the WWF project in the Sebangau.

Recommendation B9: Customary laws should be recognized in order to reduce potential conflict in land tenureship.

Local NGO's may be pushing for this but the Ministry of Forestry does not have land tenure on its agenda.

USAID funding is available to enable NGO's to look into these issues.

Recommendation B10: Apply law of Agraria for justifying land tenureship at the local level.

No advancements that we know of and participants at the 2002 Palangkaraya Conference were confused as to why it was included.

C: Hunting

Recommendation C1: Formation of anti-poaching groups that include local government people and NGOs.

It is now recommended that this become incorporated into the general concept of orangutan protection units.

D: Fire

Recommendation D1: Fire prevention - create buffer zones of fire resistant trees to protect national parks.

The Japanese International Cooperation Agency (JICA) in Way Kambas National Park, Sumatra, have implemented a long term project to include planting fire resistant trees. However the success or otherwise of this kind of project is unknown, and may not be beneficial; e.g. exotic species may develop into a pest, or trees may be fire-proof, i.e. they themselves are not killed by fire, but fire can still spread through the understorey into the forest. Additionally, many fires are started within the protected area by illegal loggers or hunters, as opposed to spreading in from outside.

A better recommendation suggested involves planting economically valuable tree species in the buffer zone around the park. It is then envisaged that the local communities would have a vested interest in protecting the area from fire and would thus take an active role in fire prevention.

Recommendation D2: Fire Management - train fire monitors and fire fighters for in situ response to fires.

Action Step 1: Obtain funding.

Many organisations are providing funding, including JICA, the US Forestry Service, USAID and Integrated Forest Fire Management Project (IFFM). More is needed due to the amount of equipment and personnel needed to effectively fight forest fires.

Action Step 2: Hire and train fire monitors/fighters.

The Indonesian Government has cut back on the fire-monitoring budget since 2000.

General Recommendations

The Habitat and Species Working Group made several general recommendations regarding habitat and species conservation:

1. It must be recognised that habitat destruction is the most serious threat facing the survival of the orangutan species. It must also be remembered that, despite apparent successes in many areas, the wild population of orangutans continues to fall in numbers and orangutan habitat continues to be destroyed – therefore we are failing to save this species. We need to discover a new mechanism for protecting and stabilising wild orangutan populations. Therefore, future workshops must place this item at the top of the agenda, and senior biologists and senior members of International and Indonesian NGO's should take part in the Habitat Protection Working Group. It was noted that members of key Indonesian NGO's, for example WWF and TNC, who are actively working in priority regions were not invited to the workshop in Palangkaraya when their participation should be being encouraged. In addition, Habitat and Species Protection includes so many major issues that it was not possible to cover all of them during this workshop. It is recommended that future workshops include separate Socio-economic and Governance; and Law and Law Enforcement (see recommendations G3-9) working groups.
2. It is recommended that an Orangutan Conservation Forum (OCF) be established, as discussed during the Palangkaraya Workshop. The OCF will have a committee structure yet to be decided, to incorporate representatives from every priority site and NGO active in the field of orangutan conservation, both Indonesian and International. The OCF will have as its main objective the follow-up of recommendations made during the Balikpapan and Palangkaraya workshops. It is also envisaged that the OCF can act as a focal point for representations to the Central Government in Jakarta on orangutan and habitat protection issues, and for advice coming the other way. It may also be able to act as a fund-raising body to accumulate monies for potential future incentive programs (see recommendation H1).
3. Person(s) Responsible: In the first instance, Jito Sugardjito & Mark Leighton
4. The UNEP Great Ape Survival Project (GRASP) should be fully endorsed. This programme is encouraging countries with naturally occurring populations of Great Apes to produce a National Great Ape Survival Plan (NGASP), facilitated by GRASP's Technical Support Team. It is recommended that the recommendations made during the Balikpapan and Palangkaraya Workshops be incorporated into Indonesia and Malaysia's NGASP's. It is also recommended that the problems facing Sumatran and Kalimantan populations are diverse enough to warrant separate NGASP's for these two regions. A summary of the partners and initiatives contained within the GRASP project is included as an appendix to this working group report.
5. The Great Ape World Heritage Species Project should be fully endorsed. The Project's mission is to secure the passage of an International Declaration and Convention designating the four Great Apes as World Heritage Species. Such a designation will generate global recognition that

this crisis requires international co-operation, commitment, and action if the Great Apes are to remain as part of our world heritage (see Appendix 2 at the end of this section for full details).

Specific Recommendations

The specific recommendations of the Habitat and Species Working Group fall within the following three equally important and mutually supporting areas:

- (i) **Strategic investment of effort through the application of principles of conservation biology;**
- (ii) **Law enforcement; and**
- (iii) **Incentives for communities and local government to contribute to conservation.**

(i) Strategic investment of effort through application of principles of conservation biology.

- 1. Conservation efforts should be directed upon all sites with potentially viable populations to minimize extinction risk.**

Sites that are expected to have the largest populations over the long term should be given highest priority. This long-term expectation should not only be based on current population size but also on current and future ecological and political risk. Enforcement / protection, education / awareness, and incentive efforts should be focused most directly on these priority areas

- 2. Systematic surveys throughout the orangutan range should be conducted to ensure that all priority sites are identified**

Rationale: Extinction risk will be minimized in the future through the careful protection and monitoring of a series of replicated, viable wild populations. This requires the identification of all such viable populations. Amongst the most encouraging updates on the status of wild orangutan populations and habitat are reports that large populations of orangutans have been discovered or confirmed in several new areas (see *update on previous recommendations*).

Action Item: The few remaining areas that are large enough to potentially support viable populations should be systematically surveyed in the upcoming year to ascertain whether or not they hold substantial numbers of orangutans. These surveys may be conducted by researchers or NGOs, however efforts should be coordinated. Reports of all surveys done should be sent to OCF and other relevant organizations. It is suggested that all teams follow accepted line transect methodologies that estimate population size based on orangutan nest density (after van Schaik *et al.*, 1995; Singleton, 2000; Buij *et al.*, in press; Morrogh-Bernard *et al.*, in press; etc.). Such surveys should be organized and led by those experienced with the technique, and should incorporate local students, forest officials, and NGOs to enhance the technical capacity of local groups. The results of such surveys should be cautiously interpreted, as all parameters that are used to convert nest count data into density estimates can vary

markedly between sites. Specifically, we suggest the use of reasonable but conservative values for nest decay and construction rates.

Person(s) Responsible: Carel van Schaik; Ian Singleton; Andy Marshall; Simon Husson; Marc Ancrenaz

- 3. A population and habitat viability analysis (PHVA) should be conducted that incorporates new orangutan field data with the aim of more accurately determining the priority populations (recommendation 1) and also more accurately estimating the minimum viable population size. This should only be carried out following the satisfactory completion of recommendation 2.**

Person(s) Responsible: OCF

- 4. Experienced conservation biologists should assist local and national stakeholders to identify and implement a land use plan for conserving these priority populations. Capacity building with local government (e.g. BAPPEDA Tingkat I and II) is key to this process.**

Person(s) Responsible: USAID and its partners will help the district of Berau and in the Sebangau catchment identify appropriate conservation areas.

- 5. The integrity of all priority areas of orangutan habitat should be maintained by the prevention of all forms of habitat fragmentation or degradation, including building roads, canals, and water-drainage schemes, or land clearing by fire, encroachment and conversion of natural forests. In particular, the current road construction proposal known as 'Ladia Galaska', that will result in a series of major roads cutting through the Leuser Ecosystem in Sumatra and destroying its ecological function, should be rejected, in accordance with a decision by the World Bank and various local NGO's not to support this proposal, in favour of alternative proposals that link up existing villages without cutting through any natural forests.**

Rationale: Further fragmentation of priority areas must be stringently prevented to maintain the integrity of orangutan habitat in priority areas. The current road building projects in the Leuser Ecosystem are a case in point. Such projects have devastating effects on wildlife populations by facilitating the process of habitat destruction and directly sub-dividing the population. Thus a viable population can easily and rapidly become non-viable due to the direct and indirect effects arising from road construction projects, especially under the current conditions of virtually no law enforcement in most areas with orangutan populations, including the Leuser Ecosystem. It is essential that this does not happen to any existing, potentially viable orangutan population. The case of the Sumatran orangutan is particularly worrying since the Leuser Ecosystem population is the only known remaining viable population of this unique species.

Person(s) Responsible: OCF

6. **Introduction of orangutans into areas outside their current range will cause ecological disruption for other organisms, some of which may be endangered species. Any proposed introduction into areas outside the current range should be considered by a wide range of tropical ecologists (not only orangutan experts), and only conducted where the proposed introduction has conservation value (in accordance with IUCN primate reintroduction guidelines).**

(ii) Law enforcement.

7. **Orangutan protection units should be implemented. Efforts should be made to standardize methods, co-ordinate protocol, and monitor success. The results of the pilot studies that are beginning at Gunung Palung and other locations should be reported and disseminated to OCF.**

Rationale: A protection system for the orangutan and its habitat should be formed in order to secure the goal of conserving the species over the long term. In several places it is clear that current protection systems do not work effectively in the field. Thus a new method should be formulated. Existing systems to protect other large vertebrates (e.g. rhino and tiger patrol units) will be modified for use within orangutan ranges. The soon-to-be established training centre for tiger protection units in Bukit Tigapuluh National Park (BTNP) will be used to co-ordinate and standardize methods.

Several programs will be launched soon; e.g. a pilot study in Gunung Palung National Park, followed by similar work in northern Sumatra and Tanjung Puting National Park.

Action Items:

1. Collaboration with leaders of Rhino Patrol Unit (RPU) and Tiger Patrol Unit (TPU) should be continued and detailed information concerning the programs should be sent to OCF. Recommendations from comparable efforts in other countries should be incorporated (e.g. Cambodia)
2. Training and protocols used by RPU and TPU modified to fit the purpose of orangutan protection. The product will be used as a standard operating procedure.
3. Trainees consisting of experienced and effective forest rangers and enthusiastic and reliable villagers from localities within orangutan ranges will be sent to the BTNP training centre.
4. A team to monitor the progress and performance of the teams will be formed. It will evaluate and possibly modify the training modules as the program moves along.

5. Devoted and dedicated graduates should be rewarded appropriately in order to keep the working morale up.

8. Given the existing challenges with law enforcement, new methods that also defend priority areas should be investigated and rationally evaluated (e.g. river barricades, tree spiking).

Rationale: In theory, orangutans and National Parks are protected under existing laws in Indonesia and Malaysia. However, all participants agreed that law enforcement was essentially non-existent, especially on the local level. Realistic consideration of this issue suggests that it will take substantial time to strengthen national and local law enforcement to the level required to adequately protect orangutans and their habitat. This is a major concern, as little valuable habitat will remain to be protected if the integrity of existing areas is not maintained while efforts are made to improve law enforcement and community support. Therefore, we badly need creative new methods that are feasible under the present political climate.

The group applauded the Gibbon Foundation's open challenge to anyone who could discover a way to reduce the value of timber without hazardous side effects to humans. Approximately twenty proposals were submitted over the last year. However, none were found to be feasible. Continued efforts should be made to find such a solution. In addition the Working Group requests that these proposals be made available to any interested parties, together with an explanation of why the methods were deemed unfeasible. The group discussed options that could be employed until such time that a better solution is found. The two methods that were raised were barricading rivers and tree spiking.

Little is known about the efficacy of blocking the rivers that are used to transport illegal logs, and little time was spent discussing this option. The only example of implementation of this method was at Tanjung Puting. Inadequate data are available to assess the efficacy of this method. As with all methods, the efficacy of river barricading should be addressed as a research question that weighs the costs and benefits of all available actions (see below).

Tree spiking was discussed at considerable length. Given the lack of knowledge of this issue, the apparent success of the method in at least one protected area in Indonesia, the failure of alternative methods in many areas, and the governmental and NGO support for tree spiking that exists on the local and national level in Indonesia, our group made the recommendation that tree spiking be objectively assessed as a potential tool in the protection of certain high priority conservation areas. The position of the Habitat and Species Protection Group on tree spiking is summarized below (with a lone dissenting position submitted in Section 8 of this document).

In some contexts, where other measures cannot be employed to deter illegal logging in protected areas, some stakeholders have endorsed tree spiking as an effective measure to prevent logging. To date, evaluation of this approach has suffered from over reliance on emotional and political issues and has been poorly advised by careful scientific studies on the effectiveness of tree spiking in deterring illegal logging. We suggest that tree spiking be subjected to a careful cost/benefit analysis. Such an analysis

should compare all of the anticipated costs and benefits of tree spiking to the costs and benefits of other proposed methods, and to the costs and benefits of inaction. For example, it must be acknowledged that any enforcement effort will have associated risks. Logging patrols by armed forest rangers and police are mandated under Indonesian law and are widely accepted as valid and reasonable actions to counteract illegal activities in areas that are considered national assets. The risks of human harm due to violence are considerable in these situations. We expect that the outcome of careful consideration of all relevant factors should provide the data upon which rational and informed decisions could be made.

Person(s) Responsible: The Gibbon Foundation to provide information on the unsuccessful proposals submitted to their open challenge.

9. The Orangutan Conservation Forum (OCF) establish a Law and Law Enforcement Committee (LLEC) to undertake continuing review and analysis of law related to orangutan conservation, direct research into enforcement, and undertake conservation education of enforcement officials and the legal profession.

Rationale: Successive orangutan workshops and conferences have recognized that law enforcement in relation to habitat protection and illegal logging, and enforcement following orangutan confiscations are fundamental issues to prevent species extinction. While law enforcement is an issue that cuts across other issue areas, the input of enforcement officials, lawyers, judges and others in the law enforcement and administration of justice (LEAJ) community could be productively engaged to advise on such issues so further contributing to conservation of the orangutan and its habitat.

Action Item: Individuals interested in conservation and representing all sections of the LEAJ community should be identified and proposed to the OCF to form the core of the LLEC. Representatives should include enforcement officials (i.e. polisi hutan, national police, and local level enforcement officials); government lawyers (i.e. prosecutors), environmental lawyers; and appropriate members of the judicial community.

Person(s) Responsible: Barita Manullang / Kala Mulqueeny

10. The OCF LLEC invite high level and local representatives of the policing, enforcement, and judicial community to next year's workshop and consider conducting an earlier workshop to be held in December 2002 to consider these issues.

Rationale: Law enforcement officials, Indonesian legal professionals and members of the judiciary should be made aware of the critical need for conservation in Indonesia in general and orangutan habitat and conservation protection in particular. The LLEC should engage the law enforcement and administration of justice community (particularly senior members) on issues related to orangutan conservation and habitat protection. The input and involvement of senior members of the community is necessary to provide ownership of conservation issues by these members of the Indonesian legal community, and to ensure endorsement of these issues within all jurisdictions, agencies, and

departments. Their input is critical to determine their perspective and the problems that may occur in apprehension, prosecution and enforcement.

Action Item: OCF Law and Law Enforcement Committee propose individuals to be invited to next year's workshop. OCF investigate existing efforts within the Department of Forestry and CITES conservation training programs.

Person(s) Responsible: Law and Law Enforcement Committee once constituted.

11. The OCF LLEC review the effectiveness of the Conservation of Living Resources Act 1990, the Forestry Act 1967/1999 and consider the amendments currently proposed to this framework legislation.

Rationale: These framework acts are currently under review. The OCF should determine whether it should take a position on the proposed amendments and provide input into the law reform process. Thus, the orangutan community has an opportunity to provide concrete input on revisions to these laws if revisions to penalty, sentencing, and the operations of these acts are considered appropriate. The report currently being prepared in relation to law and law enforcement for the World Heritage Species Project may be reviewed in this context upon completion.

Action Item: LLEC consider the effect of the acts and proposed changes.

Person(s) Responsible: Law and law enforcement committee once constituted. Kala Mulqueeny is contact person for the report on law for the World Heritage Species Project report.

12. The OCF LLEC should direct systematic independent research (NGO or academic) to learn the facts and figures about the current status of the legal system before meetings are held with governmental officials.

Rationale: There is much anecdotal evidence on the lack of prosecutions and judicial law enforcement in relation to illegal logging and orangutan confiscations. Detailed factual information would support efforts to identify problems and strengthen enforcement.

Action Items The OCF LLEC should direct independent systematic research into the following:

- The number of orangutan confiscations / arrests of illegal loggers leading to prosecutions;
- The nature of fines and penalties imposed by different courts in different districts in relation to confiscations / illegal logging;
- The differential application of law and enforcement in different districts on Borneo and Sumatra;

- Ways to strengthen law enforcement against illegal loggers: including undertaking case studies in different areas and considering the relationships between local communities and the enforcement system;
- The extent and location of the orangutan pet and bush meat trade (opinions differ strongly as to the extent of such a trade).
- Other issues to be identified by the LLEC

Person(s) Responsible: Law and Law Enforcement Committee once constituted.

13. Research should be conducted into whether enforcement officials in local jurisdictions clearly understand their policing and enforcement responsibilities, and the bifurcation between the enforcement roles of local v. central administration.

Rationale: The individual enforcement responsibilities of central, local and forest police and government officials appear not to be clearly delineated and are poorly understood by staff in the field. This offers an excuse for officials to deflect responsibilities from one department to another. There is a need to clarify each department's responsibilities and powers to individuals responsible for enforcement. The research can be used to supplement and strengthen lobbying efforts suggested in recommendation 15.

Action Item: Law and Law Enforcement Committee to direct research.

Person(s) Responsible: Law and Law Enforcement Committee once constituted.

14. Research should also be conducted into the potential for streamlining enforcement procedures for apprehending, processing, charging, and ultimately prosecuting offenders.

Rationale: Four procedural steps are involved prior to an offender being convicted of an offence. Administrative and evidentiary problems create bureaucratic and deliberate delays in the process, which contribute to the small number of offenders apprehended and eventually convicted.

Action Item: Law and Law Enforcement Committee to direct research.

Person(s) Responsible: Law and Law Enforcement Committee once constituted.

15. The Head of Police, the Minister of Internal Affairs, the Minister of Forestry and the Minister of Justice should be lobbied to ensure that the enforcement responsibilities of the central, local, and forest police are clarified to those persons implementing enforcement of laws relating to illegal logging and orangutan protection.

Rationale: Large numbers of law-breakers are not apprehended, charged and prosecuted (e.g. many organized teams of confiscations take an orangutan to a rehabilitation centre, but do not charge the pet owner). Offenders of such cases should be considered as breaking the national law. To enforce such

law, police headquarters at the national level should collaborate with the DirJen PHKA within the Ministry of Forestry in Jakarta.

Lobbying these Ministries should encourage the preparation and circulation of internal policy, and the dissemination of this policy through district enforcement heads and training programs.

Action Item: OCF and the Law and Law Enforcement Committee should initiate an alliance with other environmental and advocacy NGOs. As part of this alliance the OCF will present the research results from recommendations 13 & 14 and lobby the central Police Department in Jakarta. The OCF in conjunction with the alliance will identify key members of parliament to discuss the problem.

Person(s) Responsible: Barita Manullang; and Law and Law Enforcement Committee once constituted.

(iii). Incentives to communities, local governments, and HPHs

16. : The idea of incentive programs is to reward local communities, local governments, and HPHs for effective conservation practices.

Potential Incentive Options:

- Conservation contracts
- Debt for nature swaps
- Purchase or long term lease
- Capacity building
- Development programs (i.e. projects that local communities run)
- Incentives that work in logging concessions to enable sustainable logging
- Timber certification
- Plant economically valuable tree species as ‘fire breaks’
- World Heritage Sites
- Carbon sequestration

Action Item: Appropriate incentives for communities, local government, and HPHs need to be identified by accumulating already existing information resources (e.g., WWF’s list). It is recommended that a list of existing incentive programs is collected (not limited to orangutan areas or Indonesia) and evaluated to determine which appear to be the most successful for protecting a specific area of land or

species within that area. (NB it must be noted that the definition of success varies between programs and this must be taken into account.)

Action Item: Identify new potential incentives and independently evaluate which ones are most appropriate (have the highest conservation value) for a particular area. This should be done in conjunction with a socio-economic survey of the area in question.

Action Item: Payoffs of these incentives must be tied to output. A system of effective evaluation and feedback should be researched and developed.

Action Item: Secure long-term funding for the priority areas.

Person(s) Responsible: OCF

Ecotourism: Considerations of the Habitat and Species Protection Group

It is reminded that ecotourism is defined as tourism that has no negative effect on the ecosystem. In this context, there has been little or no successful ecotourism in Indonesia, and the term 'Orangutan tourism' is used instead when considering past and future attempts at encouraging tourists to see orangutans.

Previous attempts at orangutan tourism have been largely centred upon rehabilitation/reintroduction centers, with mixed success. Problems arising have been well-documented. The only sites that tourists regularly visit with the intention of viewing wild orangutans are the Kinabatangan River in Sabah (this is also for the Proboscis monkey and other primate species as well as elephant) and, to a lesser extent, Danum Valley in Sabah and Tanjung Puting National Park in Central Kalimantan. Revenue and attention generated from tourism is regarded as one of the reasons that the Kinabatangan River retains conservation area status.

There exists the potential for tourists to visit Sumatra or Borneo for a 'wilderness experience', centred upon the possibility of viewing orangutans in the wild. Any future project of this kind should aim for the ultimate standards of eco-tourism, by being well-planned and well-managed in regard to habitat and species disturbance and waste disposal; involving local communities in decision-making and employment; the project should return a sizeable share of the profits to the area for direct conservation efforts and community incentives; and be monitored by an independent body. This body should be made up of a committee of relevant scientists from many varied backgrounds as well as other professions such as business. It should also be involved during the planning stage. To best achieve these criteria low numbers of tourists is preferred, and to maximise revenues they would have to pay high fees. This will thus require high initial investment to provide top-class facilities.

In the current uncertain climate in Sumatra and Kalimantan vis-à-vis security and illegal logging, it is not considered appropriate to initiate any further tourism development in wild orangutan habitat in these areas at this time. It is also unclear whether the numbers of visitors required to make this activity feasible can be encouraged to visit Kalimantan, considering the competition from nearby Bali, peninsular Malaysia, Sabah and Sarawak, and also the remoteness of most potential locations.

Considering all the above, the best option may be to encourage and promote local community-based initiatives in places that are not priority areas for orangutan conservation and are thus not candidates for immediate protection and/or incentive efforts. These areas should be encouraged to follow IUCN guidelines for tourism as well as recommendations set out in this report. Such projects can then be used as models for future potential orangutan tourism ventures in priority areas.

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List of Abbreviations Used

BOS	Balikpapan Orangutan Survival Foundation
BTNP	Bukit Tigapuluh National Park
CARE	Cooperative for Assistance and Relief Everywhere, Inc.
CCCDF	Canadian Climate Change Development Fund
CEPF	Critical Ecosystem Partnership Fund
CGI	Consultative Group on Indonesia)
CI	Conservation International
CIDA	Canadian International Development Agency
CIMTROP	Centre for International co-operation in Management of Tropical Peatland
CSBG	Conservation Breeding Specialist Group
EIA	Environmental Impact Assessment
FFI	Flora & Fauna International
GCF	Global Conservation Fund
GRASP	Great Ape Survival Project
HPH	
IDCF	Interdepartmental Coordinating Ministry of Forestry
IFFM	Integrated Forest Fire Management Project
IMF	International Monetary Fund
ITTO	International Timber Trade organization
IUCN	International Union for Conservation of Nature
JICA	Japanese International Co-operation Agency
LH	Lingkungan Hidup
LLEC	Law and Law Enforcement Committee
MoF	Ministry of Forestry
MOU	Memorandum of Understanding
NGASP	National Great Ape Survival Plan
NGO	Non-Governmental Organization
OCF	Orangutan Conservation Forum
PHKA	Directorate General of Forest Protection and Conservation, Ministry of Forestry, Indonesia
PHVA	Population Habitat and Viability Assessment
RPU	Rhino Protection Unit
SGS	SGS International Certification Systems, Inc.
TNC	The Nature Conservancy
TPU	Tiger Protection Unit
UNEP	United Nations Environmental Protection
USAID	United States Agency for International Development
WWF	World Wild Fund for Nature

Appendix 1 for Habitat and Species Conservation Working Group

The UNEP/UNESCO Great Ape Survival Project (GRASP) Outline of partnership and Technical Support Team

Project Origination

- The Great Ape Survival Programme (GRASP) is a United Nations Environment Programme (UNEP) and United Nations Educational, Scientific and Cultural Organisation (UNESCO) project, administered by the Department of Environmental Conventions, UNEP.
- GRASP was launched at UNEP in Nairobi, Kenya on September 25th 2001.
- There are three Ape Envoys – Russell Mittermeier, Jane Goodall and Toshisada Nishida - and one Special Adviser – Richard Leakey.
- Ian Redmond (Head of the Technical Support Team), and the Born Free Foundation, together with Robert Hepworth at UNEP, played an important role in the programme's conceptualisation and development.



Project Execution

- GRASP is a wide-ranging initiative, with many threads being executed by different organisations.
- Activities include: advancing government policy in range states, collecting and compiling data about ape populations and their protection, supporting field projects, undertaking appropriate activities in international conventions and raising awareness of the plight of the great apes.
- Field projects range from national awareness raising to local education, from protected area management to community development, and from on-the-ground research to political negotiation.
- The Born Free Foundation is supplying the Technical Support Team
 - ❖ The Technical Support Team supports the development of National Great Ape Survival Plans (NGASPs).
 - ❖ The Ape Envoys and Technical Team will be undertaking visits to all of the 23 range states to facilitate the development of a NGASP.
 - ❖ The development of NGASPs will also be followed up through the UK partners and counterparts in the relevant countries.
 - ❖ The GRASP Envoys and Technical Team will **not** be developing NGASPs for these countries. An NGASP is a national government policy document and the Technical Team and Envoys are not trying to write government policy for range states. They are encouraging them to do so and are facilitating the process.
 - ❖ In addition, a database will be compiled of great ape conservation information, including details of stakeholders in ape conservation, ape populations, ape conservation projects, non-wild ape populations, and legislation relating to ape conservation.

- UNEP-WCMC (the World Conservation Monitoring Centre) will be involved with this process and will be producing an atlas detailing the status of great apes throughout their range.

GRASP Partners

United Nations Environment Programme (UNEP); United Nations Educational, Scientific and Cultural Organisation (UNESCO); African Wildlife Foundation (AWF); Ape Alliance; Born Free Foundation; Bristol Zoo Gardens; Bushmeat Crisis Task Force; Conservation International (CI); Convention on Biological Diversity (CBD); Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); Convention on Migratory Species (CMS); Fauna and Flora International (FFI); The Jane Goodall Institutes (JGI); The Orangutan Foundation; The Wild Chimpanzee Foundation (WCF); World Conservation Monitoring Centre (WCMC); World Wide Fund for Nature (WWF).



STRUCTURE OF NATIONAL GREAT APE SURVIVAL PLANS **Draft outline for content of NGASPs**



1. Distribution of Great Apes and Land-use Patterns in their Habitat

- **Species presence / absence:** historical, recent past & present, for all sub-species
- **Distribution Maps:** known range for each sub-species; GIS if possible
- **Vegetation Maps:** habitat types, elevation, etc
- **Land-use Maps:** including ownership, concession boundaries, etc

2. Threats to Great Ape Survival

- **Declining populations:** main causes and stakeholders involved
- **Direct threats:** hunting for meat / traditional uses, live capture, disease
- **Indirect threats:** other traps and snares, disturbance from logging / mining; other habitat loss
- **Resource extraction:** legal and illegal activities in apes habitat in each administrative area

3. Current Legislation and Conservation Action Relevant to Great Apes

- **National Law:** current legislation and enforcement provisions (are they adequate?)
- **Traditions:** relevant local traditions or beliefs eg sacred forests, taboos on great apes, etc
- **Protected Areas:** current & proposed covering ape habitat - management, protection (legal & actual)
- **Conservation Projects:** field projects, sanctuaries, education programmes, with contact details
- **INTERNATIONAL AGREEMENTS: CURRENT & PROPOSED - TRANS-FRONTIER AREAS, REGIONAL PACTS, CITES, CBD, ETC**

4. Required Action to Halt the Decline in Great Ape Populations

- **Priorities for action:** immediate, medium and long term proposals
- **Implementation:** governmental, NGO and private agencies best placed
- **Possible Goals:**
 - Research:
 - determine the significance of potential threats in specific populations or in general
 - determine effectiveness of potential solutions to known threats
 - survey the exact distribution of great apes, past and present
 - Protection:
 - improve law enforcement relating to wildlife / apes eg regulating bushmeat trade
 - designate new protected areas or alter size or status of existing ones
 - create new protected area designations eg community reserves, game management areas, etc
 - increase anti-poaching efforts in protected areas which include ape habitat.
 - Education:
 - include subjects related to great apes in National Curriculum
 - implement an awareness campaign on ecological and economic values of great apes
 - Development:
 - implement sustainable forest management, eg with legal requirements on concessions

- develop alternative livelihoods for people currently impacting on ape survival;
- develop and market alternative protein sources to consumers of bushmeat;
- promote the sustainable use of legal forest resources, such as non-timber forest products
- develop a system great ape viewing for eco-tourism, research and filming
- ensure that benefits / profits from ape presence reach local community

5. Budget for resources needed to implement the required action

- **Core costs:** for building capacity and supporting central government activities
- **Project costs:** for proposals from small to medium NGO projects to major development initiatives

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Section 5

FIELD SITES WORKING GROUP REPORT

Field Sites Working Group Report

Update from Research and Release Sites Group

Most of the recommendations developed last year are still completely valid. Here, we provide a brief update of developments concerning these recommendations.

First, research sites are still disappearing, so active defense of existing ones remains a top priority. Fortunately, some of the sites are being protected, and new sites are being planned in Sarawak (Batang Ai) and Central Kalimantan (Kapuas), consistent with the call for more active sites. It has recently been found that Berau offers interesting opportunities for field research.

We called for greater collaboration across research sites. This recommendation, too, is being followed up on. A workshop was held in California in February in which orangutan cultures were mapped and a first attempt was made at a comparative socioecology. At this meeting, we also made strides toward standardization of the research protocols, and a set of guidelines has been uploaded on the web site: (www.orangutannetwork.net). Researchers are actively discussing collaborative field efforts, including island-wide umbrella projects that cover all active field sites.

Most urgent remains the integration of field and reintroduction projects. This is why the research group decided to join the reintroduction group to help develop standardized guidelines for reintroduction.

Working group participants: *Carel van Schai, Gatot Margianto, Rebecca Wadler, Arni Diana Fitre*

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Section 6

PUBLIC AWARENESS AND EDUCATION WORKING GROUP REPORT

Public Awareness and Education Working Group Report

Introduction

There remains a general lack of knowledge and understanding of the plight of the orangutan and the threats to orangutan habitat across the board on local, national and international levels. The requirement for effective educational programmes that address the need for conservation of orangutan habitat, and the problems of forest destruction and trade in orangutans for pets has never been more pressing. With such little time to change attitudes towards the environment, education is paramount. It is only through effective educational practices that we can ultimately hope to change behaviour.

The working group has considered three target areas to which education should be directed, as identified by the 2001 workshop:

- ❖ Local communities
- ❖ National awareness campaigns (Indonesia and Malaysia)
- ❖ International community.

The discussions and recommendations set out in the 2001 final report have been considered, and updated where necessary. The report had many valuable issues that need further implementation. Some are repeated in this report as they are still applicable.

Local Community Education and Awareness

Lack of Co-ordination among NGO and Education Programmes

2001 Recommendations:

1. Develop an Education Forum linking all organizations.
2. Compile a contact list of organisations involved in education.
3. Consult relevant education experts.

Review of 2001 Recommendations

A significant progression in orangutan education was made during the 2001 Rehabilitation and Protection workshop by the conception and formation of a centralised education body, the '*Forum Komunikasi untuk Pendidikan Konservasi*'. However, despite the progression of many individual projects, it was recognised that educational/awareness programmes have continued to operate independently. During the intervening year, there has been no communication or discussion between

participants of the 2001 working group or their respective organisations regarding collaboration on educational projects. As a result, no feedback was given to the newly established Forum Komunikasi untuk Pendidikan Konservasi Orangutan.

The only returning participant from the 2001 education working group was Jeane Mandala, of BOSF Indonesia. Subsequently, the only accurate assessment of the progress made since the last workshop in any individual educational project was for BOSF. In general, we have no clear understanding of whether many recommendations made last year were carried out by other organisations.

Education Forum Rationale 2002

To bridge the communication gap across groups involved in education, and avoid replication of effort, the working group recognised that the centralised education organisation must become operational. The *Forum Komunikasi untuk Pendidikan Konservasi Orangutan* was given the equivalent name in English of Orangutan Conservation Communication Education Forum (acronym OCCEF) and the group defined its aims:

- to act as a centralised body for communication and facilitation of information sharing between all groups/individuals involved in orangutan conservation and other environmental education. This includes individuals who are interested in starting new education/awareness programmes,
- to share and generate new ideas for educational resources (methods and specific resources), and
- to seek funding for production, collection and distribution of educational materials to benefit all organisations involved with OCCEF.

The implementation of any educational programmes does not fall under OCCEF's remit, nor will OCCEF seek funding for educational grants for individuals or individual organisations.

Immediate Actions

- The working group decided to make some headway on tackling the problem of the lack of communication between educational groups, which was perhaps the most pressing of all the 2001 recommendations, in an attempt to catalyse the process of achieving an operational status for the much-needed education forum. The group as the first task of the education forum produced a draft list of all educational projects that are known to be currently underway. (Table 1)
- As temporary co-ordinator of OCCEF, Jeane Mandala will contact each individual/organisation listed in the 2001 Workshop Report and additional organisations involved in education identified by this workshop (see list and table 1 below). This will identify what educational efforts have been completed, the resources and media used, the progress that has been made and any gaps that exist. (The co-ordinator will also inquire if any feedback has been undertaken (and how) for each resource, and if so, how successful it was.)

Contacts from 2001 Workshop

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

Other contacts in final report:

- ❖ *People responsible for developing guidelines on community research: Stacey Sowards, Tamen Sitorus*
- ❖ *Michael Sowards*
- ❖ *People for database : Andy Antilla , Emanuelle Grundmann*
- ❖ *People for “local community” implementation : Dr Stacey Sowards*
- ❖ *Contact for education grants list : Andy Blair/OFI*
- ❖ *People compiling education and conservation grants : Dr Peter Collin /Klaus Schendel*

Mechanism of Operation and Actions 2002

OCCEF will collect all offered resources from organisations engaged in education and distribute them if able, upon request. Initially, OCCEF will approach the following organisations for sample donations (or multiples if possible):

Balikpapan Orangutan Survival Foundation (Jeane Mandala)
Orangutan Foundational International (Ashley Leiman)
Gunung Palung (Betsy Hill)
Conservation International (Pak Barita Manullang)
Sumatran Orangutan Society (Lucy Wisdom)
Sumatran Orangutan Conservation Programme (Ian Singleton)

Donated Materials

Donated materials will be headed by an OCCEF stamp/logo as well as acknowledging the donating organisation. With the establishment of the website, electronic resources will be available to download.

N.B. Donors should only give to OCCEF those materials which they are happy to be distributed to all organisations involved in OCCEF. All donations will be used for educational purposes only. Access to electronic educational resources will be controlled by password protection.

Accuracy of the content of all donated materials will be verified by representatives from Sumatra (Ian Singleton) and Borneo (to be confirmed).

(If anyone is interested in the task for Borneo, please contact OCCEF).

Short-term Actions (within six months)

1. Collection of educational resources from organisations outlined above. Portable materials will be particularly useful for outreach programmes (i.e. posters, stickers, books and other materials).
2. A web page specifically for Environmental Education will be established on the Orangutan Network website (www.orangutannetwork.net)
Lucy Wisdom will liaise with Gwen Beaver on the site construction. The website will contain details of current education projects and contact details of education co-ordinators. It will also have an events link with details of forthcoming training and awareness events. The website will host a “Questions and Answer” discussion on the site, so as to combine our expertise.
3. A list of available education materials will be put on the website. Organisations who require resources will be able to contact OCCEF. <occefgroup@yahoo.com>
4. Production of an e-newsletter in January 2003, distributed to all contacts introducing OCCEF in both English and Indonesian.
5. Areas that have been identified but not yet developed awareness and education programmes (e.g. research sites) will be encouraged to develop education programmes for local communities.

Long-term Operation

- Educational materials/resources will continue to be produced at the organisation of their origin. These will then be donated/exchanged through OCCEF at the Palangka Raya office.
- We would encourage organisations that donate resources to provide feedback on how successful each resource was (if information is available), and how success was assessed.

Staff and Location

OCCEF will be based at the headquarters of *Lembaga Peduli Lingkungan Hidup – Kalimantan Tengah* (LPLH-KT) in Palangka Raya for the initial six months, to start in September 2002. Office space has kindly been donated by Alue Dahong, of LPLH-KT.

The Orangutan Tropical Peatland Project (OuTrop) propose their Education Co-ordinator as the initial Forum Co-ordinator based at LPLH-KT. Jeane Mandala will continue to co-ordinate the Forum on a temporary basis until September 2002.

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To facilitate the smooth and continuous running of OCCEF, the additional members of the working group are willing to support Jane Mandala, the temporary Forum co-ordinator, should they be needed until September 2002.

Temporary Office Address:

Jl. Teuku Umar no. 45
Palangka Raya
73111
Kalimantan Tengah, Indonesia
Tel/Fax : +62 536 38268

OCCEF hopes to be able to employ a permanent member of staff for co-ordination of the Forum after the initial six month period. In addition to the office in Palangka Raya, the working group propose that additional storage space at a centralised office in Jakarta will help to reduce postage costs. We invite organisations based in Jakarta to offer their support (Conservation International, BOSF, WWF, TNC).

Communication

All communications with OCCEF should be directed to Jeane Mandala until September 2002 at <occefgroup@yahoo.com>. The address will remain the same and a new co-ordinator is to be confirmed after that date.

Funding

OCCEF welcomes donations for the initial set-up period and beyond. Funding proposals will be written by OCCEF for the production, collection and distribution of educational materials. This will not negate other organisations writing their own grant proposals for education, which is still encouraged. Each organisation or project should outline needs and current situations to facilitate the grant writing process. OCCEF will hold and distribute a list of information on funding bodies upon request, which will also be available on the orangutan network website education page.

Alternatively, a list of grant-making organisations can be found at:
<http://www.lib.msu.edu/harris23/grants/privint.htm>

TASK 1: Compilation of existing organisations engaged in environmental/orangutan education and awareness campaigns.

Table 1 has been collated on the basis of information presented to OCCEF at the International Workshop on Orangutan Conservation and Reintroduction, Central Kalimantan, June 2002. This is a dynamic document. If any of the information below is incorrect or needs updating we would ask that the corrections be sent to OCCEF.

Region	Institution	Associated Site(s)	Awareness Locations	Contact	Contact Details	Progress	Media used	Visitor Centre
East Kalimantan	BOSF Balikpapan Orangutan Survival Foundation	Sungai Wain Meratus Nyaru Menteng Mawas Centre	Central and East Kalimantan USA Holland France Germany	Jeane Mandala	Po.Box 500 Balikpapan. Tel. 0542 410365/ 415808, Fax. 0542 820502. Mobile 0811546710 Wanariset Samboja Km. 38. Boswan@indo.net.id jeane-m@indo.net.id	School visits Local community visits TV campaigns Free merchandise Radio Leaflets Educational visits into forest Tree planting programme Business community talks – led to funding	Role play/Games Nation wide TV and Radio Slide shows Video Planes (in flight entertainment). CD Rom in different languages. Portable materials used for travelling presentations Website www.redcube.nl/bos/	Yes
West Kalimantan	Gunung Palung Project	Gunung Palung	Ketapang	Asep Mulyadi Betsy Hill	Jl. K.S.Tubun * 213 Ketapang Tel/Fax 0534 31150 Mb. 0812 5715784	School visits Give lectures Radio talks bi-weekly School conservation groups. Site visits by high school groups (training w/ends).	Stickers Posters in town Video Lectures, Slides Field trips Brochures Calendar Website	Yes
West Kalimantan	Yayasan Madanika "Titian"	Kalbar protected areas	Plans for Gunung Palung	Pharian	Jl. Dr Wahidian Sudirohusodo Kompleks Sepakat Damai	In progress	Plans: Mobile cinema	No

					Blok 1 No 6, Pontianak Tel 0561 573275 Hp 0816 221932		Student newsletter Radio Desa	
Central Kalimantan	OuTrop-LPLH KT	Sebangau Katingan Kahayan	Central Kalimantan (Palangkaraya Sampit)	Alue Dohong	Jl Teuku Umar No 45 Palangka Raya 73111	Initiated project, workshops planned	Website www.orangutanrop.com	
Central Kalimantan	Nyaru Menteng	Tankiling		Odom and Lone, Jeane Mandala	project.o-u@lycos.com jeane-m@indo.net.id	School visits Local community visits TV campaigns Free merchandise Radio Leaflets Educational visits into forest Tree planting programme	Role play/Games TV Slide shows Video	Yes (July 2002)
Central Kalimantan	Orangutan Foundation International/ Yayorin (OFI)	Tanjung Puting National Park	USA UK Canada	Zagie and Yani Ashley Leiman	Tanjung Puting National Park ashley@orangutan.org.uk	School Radio has been used PR campaign in Jakarta Documentary on Metro TV Website	Colouring books	Yes
Central Kalimantan	Department Forestry PHKA	Tanjung Puting National Park				Training for students and teachers	workshops	Yes
Central Kalimantan	WWF			Pak Agus				
Central Kalimantan	Friends of National Park Foundation FNPF	Tanjung Puting	Kumai Palangalanbun	Herlin Rangkuti		Radio and Schools		No
Central Kalimantan	Conservation International Indonesia (CII) with OFI	Tanjung Puting	Tanjung Puting National Park	Wishnu Sukmatoro	Same as in N. Sumatra			

Central Kalimantan	Kalaweit Gibbon Conservation Program	Kamp Kalaweit, Bukit Baka/Bukit Raya National Park	Central Kalimantan France	Chanee Buchoz Susan Cheyne (PHD student)	Kalaweit Care Centre Jl. Pinus No 14 Palangka Raya, Kalteng Indonesia 0816 280770 kalaweit@hotmail.com +62 536 26388 Fael_inis@hotmail.com Smc51@cam.ac.uk	Radio Bulletins Leaflet campaign School visit from villages around national park Website Meetings with local villages	Lectures Paperwork Radio Personal contact with local people	
East Kalimantan	The Nature Conservancy (TNC)	Berau and Samarinda	East Kalimantan		Scott Stanley Tel Samarinda 0541 733675 Tel Barau 0554 21293 Mobile 0812 5506380	Awareness campaign only	Poster and t shirt Posters Comics Colouring books	No
North Sumatra/ Aceh	Sumatran Orangutan Conservation Programme (SOCP)	Sibalongit (with CI) and PPLH Bohorok	North Sumatra and environs of Gunung Leuser and Aceh Switzerland Germany	Ian Singleton Suherry Aprianto And Abu Lubis (see CI entry)	PO Box 1472 Medan 20001 Email sorp@indo.net.id Tel +62 618457033	PPLH is operational at Bukit Lawang. Sibolangit in planning and construction phase. Mobile unit information centre visiting local communities and schools	Lectures School visits Paperwork Mobile unit Radio	In preparation
North Sumatra	Sumatran Orangutan Society (SOS)	Bohorok	Bali Sumatra UK USA New Zealand Sweden	Lucy Wisdom Katy Jenkyns	orangutans@yahoo.com info@orangutans-sos.org	School visits Theatre performance Slide presentations Free merchandise Fairs with awareness stalls	Video, Slide Puppets Leaflets Posters/stickers Website www.orangutans-sos.org	Yes
North Sumatra	Leuser Development Programme (LDP)	None specifically, encompasses all of Leuser Ecosystem and catchment area.	North Sumatra and Aceh	Hendra Syahrial LDP Education	leuser@eu-ldp.co.id	Free merchandise School visits Fairs with awareness stalls	Posters, bookmarks	Yes

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North Sumatra	OIC- SOS (Orangutan Information Centre)		Sumatra (Medan and surrounds)	Panut Hadisiswoyo	panuthadisiswoyo@hotmail.com	Planning stages	
North Sumatra	Conservation International Indonesia (CII) partnering with YEL PanEco	Northern Sumatran provinces		Abu Lubis (and SOCP contacts)		Mobile unit is operating for campaign "Friends of national park" will be formed Law enforcement team is under design	Under Construction
Sabah		Kinebatangan		Azri Sawang			Yes
Sabah		Sepilok					Yes
Sarawak		Matang Wildlife Centre					Yes
Sarawak		Semmengog					Yes
Java	Conservation International	Sumatra					
Java Terawas							Yes
Java	Voluntary Services Overseas						

Understanding Local Communities

The scenarios and recommendations set out in the 2001 report have been considered, and updated where necessary.

Extract from Scenario 2 from 2001 Report

It is important to understand the composition, (demographic data: ethnic, educational and 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 area.

Such knowledge could be improved by a more systematic approach to developing databases concerning local communities. Large, professional surveys (called KAP surveys) on environmental awareness and knowledge have been conducted by the USAID funded EPIQ program.

2001 Recommendations (edited)

1. Each individual organisation/conservation group should collect existing demographic data by consultation with local authorities including DIKNAS, the district office (kantor kecamatan/kabupaten), PHKA/KSDA, etc, and appropriate local authorities in Malaysia. Most demographic/socio -economic information is collected and published for each district on an annual basis by the Department of Statistics (BPS), and is available in Jakarta.
2. Surveys should be conducted by organisations and conservation groups 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.
3. Surveys should be developed in accordance with existing information on communities and with the assistance of local officials and experts. Ideally, 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.

Review of recommendations and progress since 2001

Although many projects are being carried out, little feedback on the implementation of local community educational projects has been given since the 2001 Workshop.

Recommendations 2002

To continue to implement the recommendations of 2001 workshop and initiate the actions below:

OCCEF Short-term Actions for Implementation 2002 (within six months)

- OCCEF will contact the individuals specified in the 2001 report responsible for producing guidelines for ethical studies of local communities (Stacey Sowards and Tamen Sitorus). OCCEF will distribute a set of guidelines for the ethical study of local communities to facilitate community research, which will also be available on the website.
- OCCEF will contact organisations that have conducted local community research, and request a summary of the research findings. Known projects include BOS, WWF and OuTrop/LPLH-KT. A collection of existing surveys will then be collected and compiled for the use of interested organisations with appropriate training methods for surveying local communities. This will also be available on the OCCEF web page.

Training for Teachers, NGO's and Members of Local Communities

Edited recommendations 2001 from scenario 4 in 2001 report

1. Guidelines for teaching conservation materials should be developed by consultation with local Indonesian and Malaysian conservation experts.
2. Training and workshops for teachers and other local community members should be held and environmental education programmes developed.
3. Local NGO capacity building

Review of recommendations and progress since 2001

Inclusion of environmental education within the local curriculum is being addressed. Progress has been achieved in the establishment of teacher training programmes with Conservation International (East and West Java and North Sumatra), LPLH-KT (Central Kalimantan), and Tanjung Puting National Park Authority (Central Kalimantan). BOS Indonesia is also involved in training NGO's and members of local communities.

The objective of training teachers is to include environmental education modules within the local school curriculum. LPLH-KT are developing a pilot project to train teachers in developing environmental education material, by piloting schools at Elementary and Junior high school level in Palangka Raya and Sampit. If the LPLH-KT pilot project is a success, there is potential for a model to be developed which can be used for environmental education in schools throughout the whole of Kalimantan and beyond.

Recommendations 2002

OCCEF will continue to implement the recommendations of 2001 education group.

The 2002 working group further recommend that all organisations involved in establishing local curriculum development, communicate through OCCEF to feedback on ideas and progress. OCCEF will circulate a list of known contacts involved in curriculum development to each organisation.

Further recommendation is given to prioritise on education of local people in provincial localities, particularly in conservation areas.

The importance of education as a tool for change cannot be understated. Local education has the chance to instil a sense of pride in their natural environment. Effective conservation depends upon local people sharing appreciation of the orangutan and it's environment.

Immediate Actions

Three OCCEF members (Jeane Mandala, Claire McLardy & Lucy Wisdom) presented their advice and expertise on orangutan conservation and education at a teacher training workshop held in Palangka Raya 27-29 June 2002.

National Education and Awareness in Indonesia and Malaysia

Issues, scenarios and recommendations edited from 2001 report

A drastic change of national attitude is required because of the imminent threat of total environmental destruction. A major effort to bring this into consciousness is required. Consideration is needed as to how to accomplish this in Indonesia and Malaysia .

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. 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 West Kalimantan 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 from 2001

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.

Recommendations 2002

It was agreed the 2001 recommendations were still relevant and valid. It was resources, action and time required to implement them.

The group further recommends:

- Follow up should be undertaken on USAID’s 2001 national forest campaign, and the “*No Forest, No Future*” campaign by the Forestry Minister, Marzuki Usman (in 2001), for potential resources that could be used elsewhere and distributed by OCCEF.
- OCCEF to compile a list of all of the international schools operating in Indonesia and Malaysia.

Review of progress since 2001

Progress has been made on introducing public awareness on a national scale. For example, BOS has led national campaigns on Garuda Airlines and national TV stations, and national radio programmes. Around sixty ex-captive orangutans have been donated to BOS as a direct result of national awareness campaigns, highlighting the success of raising awareness nationally. BOS has also reached international audiences by TV campaigns through its sister organisations in Australia, USA and Europe. The response generated further funding. OFI have made use of Indonesian (and international) public figures.

Recently BOS and Nyaru Menteng held a newspaper campaign in the Central Kalimantan area highlighting the outcome of transfer of diseases between apes and humans. This was very effective amongst the local community. As a result many people contacted Nyaru Menteng to hand in their captive apes. TV, however, is much more expensive and sponsorship would have to be sought for this.

Recommendations 2002

We recommend that additional conservation organisations adopt similar strategies like the BOS and OFI examples above.

It is recommended to try all different avenues of education, such as performance, mobile units, video, exhibitions, puppets, etc and report back to OCCEF on their effectiveness.

OCCEF 2002 long-term actions (six months to a year)

- OCCEF aims to be able to provide resources that have been produced for national campaigns (such as videos in different languages) that can be used to reach new audiences.
- Lobbying local governments remains a firm recommendation. Environmental clubs for young people in schools are encouraged, which can act as a driving body to lobby local governments, which work towards changing attitudes with respect to the environment.
- International businesses working in Indonesia should be targeted for educational talks with the secondary aim of obtaining funding, e.g. BOS have been successful in obtaining funds from KPC (Coal Company) as a follow up to education initiatives. Similarly, in Sumatra S.O.S have given educational presentations to Caltex Oil Company, and hope in the future to secure funding from them. Other organisations may have similar examples. All of these should be explored.
- Relationships between OCCEF and embassies shall continue to be developed. This could ease transportation of educational materials (such as videos). The embassy thus acts as a gateway for the transportation of materials donated. Communication between political and administrative leaders is also encouraged to maintain awareness of education project.
- Development of new conservation/education awareness projects and support of NGO's. This area has seen progress since the 2001 workshop with the initiation of new educational centers and educational programmes, (refer to Table 1).

Further recommendations and actions for 2002

Additional projects should be represented throughout Indonesia and Malaysia not just in orangutan range provinces.

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

Interested parties should also work with local NGO's to find out if NGO's want to develop or expand existing awareness and education programs. Often, existing NGO's 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 NGO's that have education and awareness components, including the large NGO's such as: WWF, CI, WCS and TNC. WALHI is an Indonesian forum with a large awareness/advocacy component.

Implementation:

- OCCEF will be responsible, where possible, for providing new materials to interested parties.
- Existing organizations should develop 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 to be used as a portable exhibit in various communities.
- OCCEF will post information on the website about forthcoming educational events, particularly in Indonesia and Malaysia. For example, there is a sponsored community eco-event being organised by IDEP in Bali in September/October 2002 involving many Indonesian based NGO's.
- OCCEF welcomes any educational materials that can be donated by international organisations for use within Indonesia and Malaysia. This would be a one-way transaction.

International Awareness

Despite international awareness campaigns, there is still a need to continue and step up exposure. International programmes should increasingly focus attention on habitat loss and eco-labelling of tropical hardwoods. There appears to be a lack of knowledge in Western countries on the provenance of timber. The issue of the pet trade should not be ignored.

Many international NGO's, organisations, zoos and individuals are working on education and awareness campaigns. However, coordination and cooperation could be improved. Everybody should work together to create a more united and effective international campaign.

Issues and recommendations from 2001 report, (edited)

Issue: It is recognised 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 for the whole of humanity its conservation should not be left solely to the responsibility of the Indonesian and Malaysian nations

There seem to be two main purposes for gathering 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. *{Note. A third purpose was identified at the 2002 workshop; recognising the power of international boycotts and lobbying on conservation issues and law enforcement}*

The target of international campaigns must be determined. Many organisations already exist in Europe, Australia and North America who are working to address these concerns. However, some evidence indicates that more campaigns are needed in East Asia. For example statistics indicate that approximately half of the wood coming out of Indonesian logging companies stays in Indonesia and the majority of the rest goes to China, Japan, Taiwan and other East Asian nations. Such statistics

suggest that more needs to be done in East Asian nations to generate awareness and implement lobbying campaigns. There is an evident lack of funds in Indonesia to support local initiatives in education, which international organisations may be able to fund in part.

Recommendations 2001 (edited)

1. A mass media campaign.
2. Sharing of educational materials. New educational programs should consult with existing organizations to acquire materials and ideas for programmes.
3. Information sharing.
4. Existing international organisations should facilitate efforts in East Asia. Such projects or branch organisations should be established in China, Japan, Taiwan, Malaysia and other relevant nations.
5. International organisations should develop working relationships with individuals in target countries without chapters or branches.
6. Lobbying of political and administrative leaders in various countries.
7. Prosecution, development and enforcement of protection laws are vital. This may enlighten countries about the problems caused by the illegal orangutan and timber trade.
8. More grant writing and proposals should be submitted to international donors. Many grants available for environment and conservation issues have not been tapped to the fullest extent.
9. Companies should be encouraged to use only sustainable forest products, particularly companies that sell wood products (such as furniture, hardware/home improvement stores).
10. Many documentaries, news programs and articles should be translated into Bahasa Indonesian/Malay. It could be useful if international organisations could fund the translation such documentaries deemed useful for Indonesian audiences.

Recommendations on international awareness 2002

It was agreed that all issues and recommendations from 2001 report are still relevant and valid. In this 2002 report, we recommend further implementation and follow-up of them.

It was recognised that OCCEF does not have the expertise to carry out all of the recommendations above, but actively encourages all organizations to pursue them where possible. It would be accommodating to be in contact with OCCEF ensuring the sharing of information, especially with regard to lobbying.

Conclusion Recommendations 2002

- It was agreed the majority of recommendations from the 2001 education group remain very relevant and valid. OCCEF recommends continuing with implementation of these and the further recommendations we have outlined in this report.
- It was recognised that it is resources and time that many organisations are lacking to apply the recommendations effectively. It is suggested that we all should actively seek more people interested in facilitating environmental education.

- An ultimate recommendation is for all ape organizations to really use OCCEF and build up on its resources.
- It is recommended for each organization, where possible to nominate a person on their team to have contact with OCCEF from time to time.
- If any organisation has an enquiry from someone (they can spare) wanting to volunteer (in particular local volunteers), they they are encouraged to suggest that the person be a volunteer for OCCEF.

Ecotourism

We felt that there was insufficient time at this workshop to discuss fully the issues involved. We have therefore not made any further recommendations.

Working Group Participants

Alue Dohong, Jeane Mandala, Claire McLardy, Helen Morrogh-Bernard, Lucy Wisdom

International Organizations/Contacts for Environmental Education and Awareness

Orangutan Foundation International

President, Dr. Biruté Galdikas
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 Los Angeles, CA 90049 USA
www.orangutan.org
 Tel: (310) 207-1655
 Fax: (310) 207-1556

BOS-USA

President, Michael Sowards
 P. O. Box 2113
 Aptos, CA USA

P. O. Box 968
 Clark, CO 80428
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Orangutan Foundation

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 7 Kent Terrace
 London NW1 4RP
 Tel: 020 7724 2912
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 Website: www.orangutan.org.uk

Gunung Palung Orangutan Conservation Program

Director: Dr. Cheryl Knott
 Program Manager: Betsy (Yaap) Hill

Email: betsyyaap@prodigy.net
Environmental Education Coordinator: Asep Mulyadi
Email: asepz@yahoo.com
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Ketapang, Kalimantan Barat
78801 Indonesia
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Sumatran Orangutan Society (SOS): www.orangutans-sos.org

UK office

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Indonesia office

director: Lucy Wisdom
e mail: orangutans@yahoo.com
P.O. Box 330 Ubud, Bali 80571
Tel / fax +62 361 9766721

Great Apes Alliance: www.4apes.co

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)

President, Dr. Joachim-Peter Collin
Hasselkamp 76
24119 Kronshagen
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Orangutan Conservation and Reintroduction Workshop

19-22 June 2002

Palangka Raya, Kalimantan
Indonesia

FINAL REPORT

Section 7

PARTICIPANT'S VISION FOR ORANGUTANS AND GOALS FOR THE WORKSHOP

At the start of the workshop, each participant was asked to introduce her or himself and answer the following 3 questions:

What is your vision for wild orangutans in the year 2012?	What role do you see yourself playing in the effort to minimize orangutan extinction risk over the next 10 years?	What is your personal goal for this workshop?
More population numbers and optimistically stabilization for orangutan population and many people more respected for orangutan protection	Approach for local community and developing on economy product to minimize for illegal logging activities in Central Kalimantan	We get recommendation for orangutan conservation with basis on local community development and rehabilitation action plan
They still in the right place in the right population in the safe jungle in balance or increased population	Trying hard to minimize mortality in quarantine learning more about orangutan diseases and their treatments	There is a good coordination with all the reintroduction vet especially in saving orangutan
Orangutan may only one can see in the zoo or film, if the forest destruction doesn't stop now . Don't be like NATO "no action talk only" we need action...ACTION	I'm a vet hope can help orangutan in quarantine and avoid transfer disease from/to orangutan to human to orangutan	Sharing information data, or knowledge about orangutan
Vision for wild orangutan in the year 2012 is they can live freely in the sustainable forest/habitat areas	My role is try to do the best for orangutan as a vet	We could work together to solve the orangutan and their habitat problems. To find solution for all the medical problems for orangutan
A network of secure protected areas in all major administrative units in the orangutans range with viable (and increasing) wild orangutan populations	Direct field research that will generate knowledge critical for reintroduction efforts and increased respect for the wild orangutans	We draw up guidelines on rehabilitation and reintroduction for Ministry of Forestry
Realistically, I feel that the remainder of Indonesia's orangutans will live in a relatively small number of populations, that are closely monitored and managed by a co-operating group of government officials, community members, NGO's and scientists	Help with surveys to identify remaining populations with reasonable conservation value, help provide scientific basis for the protection of orangutan habitat	Help raise awareness about GAWHSP, INC, to learn specific strategies to reducing illegal logging in national parks.
They will still be there and there will be new protected areas with people's participation	To execute a massive campaign on law enforcement publicity and setting up protected areas	To get objective scientifically sound input to organize the actions for helping orangutans
Those orangutans have true protected areas to live freely, including corridors between those protected areas. THRIVING!	Implementing my part of the work plan developed by this group for West Kalimantan including establishing rescue center and finding release sites	Coordination and collaboration with other groups/organizations on work plans in the field (In Indonesia) Especially on strategies of working awareness campaigns and local community building with local government, lobbying pusat

I want to see wild orangutans remaining in all the areas where they now are, and reintroduced into regenerated areas in their former range	I hope to contribute ideas, and to add my name and my presence to international initiatives for orangutans on conservation	I want to listen, propose and to add to the pool of ideas and to see the start of some implementation.
I envision that we have been successful in that there are some large sustainable and viable areas allocated to nothing but natural habitat for orangutans and other primate species and other flora and fauna. Realistically there are other sites where human/orangutan interactions will be monitored but allowed to occur (ecotourism)	My role as a PhD student and researcher is surveys, and other data collection on ways human/primate interactions can be controlled, with community involvement and strong guidelines. As well as to document and make known the current situations	That we get implement able real results and get them into the hands of the people who can get the change occurring.
I believe they will live in fully protected areas, specifically chosen for their important, rich unique, biodiversity components. I am not optimistic that unprotected areas will survive the logging machines.	I and SOS are part of a bigger network that will bring attention, focus, and awareness on the plight of the orangutans and their habitat. Particularly working in Indonesia	To meet many other people involved in all aspects of conservation, government, and orangutan habitat and maintain contact after the workshop to help implement any other plan we decide on.
Thriving, surviving in safe good habitats	Contribute to raising scientific knowledge/advisor of orangutans and contributing to the quality of orangutans rehabilitation methods	Develop shared stands and policies to guide orangutan conservation efforts, work towards effective rehabilitation process.
My vision for wild orangutan in the year 2012 is very simple protect their population and protect their habitat	Consistent with my specialize in vet so I would like to make all orangutans become healthy before their reintroduction to the forest so that minimize transmission risk factor of the orangutan and resolve the disease problem	Transfer my knowledge and standardize operating procedure for care of orangutan
Sustainable protected population under some form of management	Assisting in establishing new populations or increasing relic populations through reintroduction	Agreement of standards and procedures for reintroduction which will be implemented at ALL reintroduction projects
Almost extinct except for sanctuary	Increase the ability of PHKA to manage wildlife	Update my knowledge and looking for how I contribute to orangutan conservation
All wild orangutan living safely in protected forests.	Technical support for rehabilitation process Raising funds Public awareness Helping with a United Rehabilitation Center group	Help unite rehabilitation projects Help form United Rehabilitation Center group Knowledge of where best to give funds towards

Orangutan as species are saved in their properly protected habitat	Work together to implement action plan (integrated)	To contribute my knowledge/experience/expertise To convey/inform/ introduce what my organization has been doing on orangutan conservation so we all can work in parallel integrated and be cost effective.
Still hanging on but much more activity in Indonesia i.e. protection of forests, reduction in logging and community involvement	Active in veterinary research (TB) to improve diagnostics and involvement in a Nature park study site to assist community involvement and to protect forest	To get vet protocols accepted as government policy
That viable populations of orangutans exist in habitat on Sumatra and Borneo that is no longer threatened with destruction	To assist with capacity building and transfer of knowledge so that the governments and people in Indonesia and Malaysia can implement the necessary actions to prevent extinction of orangutans in the wild and conserve habitat.	To be able to get recommendations from previous workshops translated into action and policy
I hope the orangutan has habitat where they can live and reproduction can continue with out disturbing with strategy in protected area	I am vet and will help to protect health in population and information to public	Vet protocols
Home to protected wild orangutan habitat	Encourage the local community to do conservation programs	I want to know and get current information about orangutan conservation
If the illegal logging/poaching are not stopped seriously it would make the wild population in worse condition We will be talking more about our successes in regards to habitat protection and won't have to focus on strategies to minimize habitat loss	As we are a small organization we feel that we need to do what we can do. What we feel as the priority in our work is how to encourage the local community to participate with conservation by giving them some work with the conservation itself I see myself addressing this issue of deforestation, globalization and end of species a holistic perspective. Therefore I plan to be involved in as many aspects as possible relating to the given topics including education work with community relations	We want to get more information and idea about how we should work with other party. Work together with people from all organizations here towards conservation and preservation with Indonesia

Population stabilized by controlling human destruction of the species Enough forest truly protected to begin to allow wild populations to expand naturally	A community organizer in USA for education and support of existing organizations positively impacting the issue; Contributing to local education efforts in Kalimantan; Assisting whatever way possible in facilitating coordination between rehabilitation sites and sanctuaries	Explore possibilities of sites sharing information and developing standardized procedures and finding a way to best use my expertise to help in this larger coordinated effort.
My vision is that wild orangutans would be able to live freely without the threat of habitat destruction or the fear of being killed. My vision is that there will no longer be a need for orangutan rehabilitation sites because all orangutans will remain safe and free in their natural habitat	I hope to become involved in conservation education programs, both locally and international to raise awareness about orangutans. In addition I hope to contribute to the knowledge of wild orangutans through field research	I hope to speak to people from various organizations to find ways we can work together for the same goal
To protect the orangutan habitat	Hope that many more organizations can help the orangutan	Meeting many experts and the medical aspects
To protect the orangutan habitat Giving outreach education and schools close to the orangutan habitat	Collaborate with all conservation organization and government and local community so the orangutans' life can be saved	I hope this workshop can give benefits to all people and organization that have similar concerns and love for orangutans and its life
Still seriously threatened but hanging on thanks to current conservation efforts. In better protected areas.	Gibbon conservation works in tandem with orangutan conservation. They face the same problems and threats. By conserving gibbons through raising awareness and through rehabilitation and reintroductions then both species and habitats can be saved.	It include gibbon conservation; learn from orangutan experience and implement it for gibbons and get everyone to work together so that legislation will save both apes.
That they will be living, wild and free in good forest and are protected forever.	As a researcher in behavioral and physiological stress, to add to information base which will aid in their survival	To participate in the formulation of solid and immediately implement-able solutions to naturally not all issues facing orangutans but the most pressing: 1) deforestations and replanting; 2) capture; and 3) rehabilitation.

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Section 8

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.

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).

Tree-spiking atau Pemakuan Pohon

Kegiatan *Tree-spiking* atau Pemakuan Pohon dimulai pada tahun 70an oleh sebuah organisasi bernama Bumi Dulu! (= *Earth First!*) yang terkenal atas aksi “eko-terorismenya”. Kegiatan ini telah diusulkan sebagai salah satu cara untuk melawan penebangan liar di Indonesia. Berikut adalah penjelasan dari kegiatan ini sebagaimana dilakukan di Amerika Serikat:

Tujuan	Memberhentikan penebangan yang legal
Lokasi	Konsesi HPH tertentu
Sasaran	Perusahaan yang menebang secara syah
Status hukum kegiatan pemakuan pohon	Tidak legal
Sangsi untuk pemaku pohon	Antara denda sampai hukum penjara selama beberapa tahun. Kongres (DPRnya AS sedang mendebatkan untuk menjadikannya tindakan kriminal dengan hukuman 10 tahun penjara.
Kegiatan	Pohon di dalam konsesi dipaku, kemudian diberitahukan kepada perusahaan maupun media massa
Dampak kepada perusahaan	Perusahaan akan menghentikan penebangan di lokasi sampai paku dikeluarkan dari pohon. Alat deteksi logam dan alat sinar-X yang bisa dibawa-bawa digunakan untuk mengeluarkan paku. Ada kerugian biaya dan waktu tetapi tidak menghentikan penebangan.
Dampak kepada pegawai perusahaan	Minimal, kecuali merepotkan, karena masih digaji. Kemungkinan bahwa akan ada penebang yang tidak tahu minimal.
Jumlah kasus cedera parah yang dilaporkan	Sedikit
Potensi untuk Kerusakan	Sensaw dan peralatan gergaji dapat pecah sehingga mematikan maupun melukai pegawai. Rantai sensaw memutar dengan kecepatan 13000 ppm. Rantai yang mengenai paku dapat meledak seperti granat.
Jangka Waktu Potensi untuk Kerusakan	Sampai paku dikeluarkan, atau sampai pohonnya mati dan membusuk (sampai ratusan tahun)
Dampak Sampingan	Kadang dapat membangun dukungan masyarakat untuk menghentikan penebangan. Di wilayah Pasifik Barat Laut, kegiatan ini telah membuat opini publik untuk melawan kegiatan lingkungan.
Pilihan Selain <i>Tree-spiking</i>	Menangkap pemaku pohon. Memerotes secara legal. Melobi pemerintah lokal untuk mengubah peruntukan lahan di tata ruang.

Di Indonesia, keadaannya berbeda dengan di Amerika Serikat. Tujuan utama adalah menghentikan penebangan liar di taman nasional, cagar alam, dan hutan lindung, dan kegiatan ini diusulkan oleh pejabat pemerintah maupun LSM lokal. Sasaran utama adalah penebang liar. Penebang liar biasanya bekerja di kelompok kecil dan independen, dan sering menerima uang muka dari cukong yang akan membeli kayunya. Kayu gelondongan dapat dijual langsung ke *sawmill*, atau dibalok oleh penebang sendiri. Penebang liar dapat berasal dari masyarakat setempat atau pendatang dari daerah lain.

Pemakuan pohon berisiko untuk penebang. Rantai sensaw memutar dengan kecepatan 13,000 ppm. Dampak dari gergaji mengenai *blade* adalah *blade* atau rantai akan rusak dengan pecahannya terlempar keluar. Penebang dapat mati atau luka apabila dikenai *blade* atau rantai dari sensaw. Hal yang sama bisa terjadi di *sawmill*.

Juga bisa ada dampak negatif dari pemakuan terhadap pohon. Paku kecil (panjang sekitar 3 cm) dapat menyebabkan luka besar pada jenis pohon tertentu. Misalnya, bisa terjadi pecahan kulit dan kambium yang besar (sampai panjang 30cm) pada pohon *Ganua motleyana* karena pemasangan tanda dengan paku kecil. Apabila kulit pohon atau kambium dibuka maka akan ada kesempatan untuk terjadi infeksi dari serangga, bakteri ataupun jamur.

Kemungkinan tidak semua penebang liar akan diberitahu mengenai keberadaan paku, karena: bahaya tidak hilang selama paku berada di pohon (pohon dapat hidup selama ratusan tahun), penebang tidak masuk dalam sistem hirarki; dan sering terjadi migrasi dalam negeri. Karena penebang liar tidak digaji apabila mereka tidak menebang pohon, ada kemungkinan penebang yang sudah mengetahui keberadaan paku di suatu wilayah masih akan terus bekerja.

Apabila ada penebang liar atau operator gergaji yang dilukai, kemungkinan besar bahwa akan ada reaksi keras terhadap pendukung pemakuan pohon. Penebang liar pernah membakar kantor taman nasional dan menghajar jagawana yang berusaha menghentikan penebangan liar. Penebang liar juga mencegah operasinya stasiun-stasiun lapangan yang dianggap mehalangi penebangan liar.

Apabila ada orang yang luka atau mati, pemakuan pohon bisa juga menjadikan opini masyarakat melawan pelestarian di wilayah tertentu. Ini bisa terjadi pula walaupun tidak ada yang luka (misalnya di wilayah Pasifik Barat Laut di AS).

Sebagian besar LSM dan pemerintah lokal setuju bahwa penegakan hukum harus diarahkan kepada “cukong besar” daripada kepada penebang yang miskin. Dan ini adalah alasan yang biasanya disampaikan apabila penebang yang ditangkap tidak diproses. Ada beberapa pilihan selain pemakuan pohon yang sama mujurnya untuk menghentikan penebangan liar dan berisiko kecil. Pilihan tersebut meliputi:

- Penegakan hukum yang berlaku
- Penertiban *sawmill* yang tidak memiliki izin
- Penertiban *sawmill* yang menerima kayu ilegal
- Penhancuran kayu sitaan, dan
- Mengontrol titik strategis untuk perdagangan kayu (jalan dan sungai).

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