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A young orang-utan is the central focus of the image, clinging to a vertical tree trunk. The orang-utan has thick, brown, shaggy fur and a dark face. It is looking directly at the camera with a neutral expression. The background is a dense, out-of-focus forest with various shades of green foliage. The lighting is natural, suggesting daylight. The overall composition is vertical, matching the text layout on the right side of the page.

HANGING IN THE BALANCE:

AN ASSESSMENT OF TRADE IN
ORANG-UTANS AND GIBBONS ON
KALIMANTAN, INDONESIA

VINCENT NIJMAN

A TRAFFIC SOUTHEAST ASIA REPORT

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Photograph credit: Pet Müller's Gibbon *Hylobates muelleri*,
West Kalimantan, Indonesia
(Ian M. Hilman/Yayasan Titian)

HANGING IN THE BALANCE:

An assessment of trade in orang-utans and gibbons in Kalimantan, Indonesia

Vincent Nijman

August 2005

Credit: Yuyun Kurniawan/Yayasan Titian



Orang-utan and macaque skulls used for decoration in Central Kalimantan.

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KEY TO ACRONYMS USED IN THIS REPORT

BEBSIC	Borneo Ecological and Biodiversity Science Club
BKSDA	Balai Konservasi Sumber Daya Alam (Regional Office for the Conservation of Natural Resources)
BOS	Borneo Orangutan Survival Foundation
BPS	Badan Pusat Statistik (Governmental Statistical Body)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoP	Conference of Parties (to CITES)
ENSO	El Nino Southern Oscillation Event
GPOCP	Gunung Palung Orangutan Conservation Programme
IDR	Indonesian Rupiah
IUCN	The World Conservation Union
KKH-PHKA	Konservasi Keanagaraman Hayati - Perlindungan Hutan dan Konservasi Alam (Biodiversity Conservation Office of the Directorate General of Forest Protection and Nature Conservation)
KSBK	Konservasi Satwa Bagi Kehidupan (Wildlife Conservation for Life), (now operating under the name ProFauna)
LIPI	Lembaga Ilmu Pengetahuan Indonesia (Indonesian Institute of Sciences)
LORIES	Lembaga Ornitologi & Informasi Satwa
mtDNA	Mitochondrial DNA
MYR	Malaysian Ringgit
NGO	Non-Governmental Organisation
OFI	Orangutan Foundation International
PHKA	Perlindungan Hutan dan Konservasi Alam (Directorate General of Forest Protection and Nature Conservation)
USD	United States Dollar

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Vincent Nijman, August 2005

EXECUTIVE SUMMARY

This report presents an assessment of the trade in gibbons and orang-utans in Kalimantan, which is part of Indonesia's territory on the island of Borneo. Borneo is the third largest island in the world and, within the Indo-Malayan region, supports the largest remaining expanse of lowland evergreen rainforest, one of the most biodiverse ecosystems in the world. Most of this forest remains in the four Indonesian provinces of West, Central, South and East Kalimantan with about 50% of the land surface still under forest. However, commercial timber extraction, small-scale logging (legal and illegal), conversion, and forest fires – along with the concurrent increase in access to formerly remote areas – are increasingly threatening the integrity of the remaining forest, thus putting the survival of its inhabitants at stake.

The forests of Kalimantan are home to three species of apes i.e. the Bornean Orang-utan *Pongo pygmaeus*, and two species of gibbon, the Bornean White-bearded Gibbon *Hylobates albibarbis* and Müller's Gibbon *H. muelleri*. All three are endemic to the island and thus are not found anywhere else in the world. The Bornean White-bearded Gibbon is confined to Kalimantan and for the other two species a disproportionately large part of their populations is found in Kalimantan, rather than other parts of Borneo. As all three ape species are classified by the IUCN Red List as Globally Threatened, primarily through loss of habitat but also through hunting and trade, Indonesia bears a great responsibility towards safeguarding the future of these primates. The Indonesian government has long recognized this responsibility and has pledged to do its best to control the problems wildlife faces and to preserve both individual species and their habitats. These pledges have been formalized in a range of laws, regulations and membership of Multilateral Environmental Agreements. A number of protected areas have been established in Kalimantan, to safeguard the habitat as well as the primate populations that reside in these areas, and all gibbons and orang-utans, be it inside or outside the protected area network, are legally protected. Indonesia is a Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and all gibbons and orang-utans are listed in CITES Appendix I, which prohibits all international commercial trade of these species among contracting Parties.

Kalimantan is an important source area for the trade in gibbons and orang-utans, and as part of a larger assessment it was considered imperative to gain a greater insight into the severity of the trade in these primates, as well as how the Indonesian authorities and (inter)national Non-Governmental Organizations (NGOs) try to curb this trade. To this end, data were collected from a variety of sources: wildlife markets and private owners; public and private zoos (partially as facilitators for confiscated and donated gibbons and orang-utans); wildlife rescue centres and rehabilitation centres (facilitators for confiscated and donated gibbons and orang-utans, as well as monitors of the trade); individuals and local NGOs (monitors of trade); and the Department of Forestry (information on confiscations, prosecutions, and registered protected wildlife, and wildlife protection policy).

Over the period June 2003 to October 2004 data were collected regarding trade in gibbons and orang-utans in Kalimantan, covering the entire distribution range of the three species of interest within Indonesia. Information was collected on 1538 orang-utans (from the period 1971-2004) and 304 gibbons (2000-2004).

Primate hunting and trade in Kalimantan is largely an opportunistic enterprise, with sometimes the meat eaten, valuable body parts sold and the young, if present, taken to be kept or sold as a pet. The reported main incentive to kill adult orang-utans or gibbons was to obtain the young, and the secondary reason (especially for orang-utans) to kill individuals that entered forest gardens or plantations. Few data were collected on targeted hunting of orang-utans or gibbons specifically for meat. Likewise few data were collected on the use of gibbon and / or orang-utan parts as ornaments or as ingredients in (traditional) medicine.

The trade in orang-utans is widespread throughout Kalimantan, even in areas where the species is not present in the wild. For Kalimantan alone in 2003-2004 a total of 74 orang-utans were reported or recorded in private hands. Trade is not

concentrated at wildlife markets but rather the buying and selling of orang-utans appears to be diffuse and occurs at varied locations. Most forest-dwelling people know the commercial value of an infant orang-utan, and in the absence of effective law enforcement and any moral obligation *not* to kill an orang-utan when the opportunity arises to obtain an infant, few will resist. As such, a young orang-utan represents money and can be traded as a commodity, and is usually kept as a pet until it can be sold. 'Pet' orang-utans are transferred from the interior to the more developed coastal settlements to be sold, or professional traders may travel to a remote area and buy or order young orang-utans locally. The widespread presence or availability of 'pet' orang-utans in Kalimantan guarantees a steady supply. Hunting and capturing of orang-utans for trade is often associated with the timber trade, with many orang-utans reported to be killed inside logging concessions or forest areas that are being logged. Active protection of protected areas (national parks, strict nature reserves) is lacking in all but a few gazetted areas, and hunting levels inside protected areas may be as high as in non-protected forest. TRAFFIC received numerous reports of orang-utans (and gibbons) being hunted inside protected areas. Conversion of prime forest into (oil palm or other crop) plantations creates another source for orang-utans appearing in trade. With the clear-felling of the forest as to make way for the plantation, and in the absence of any planning regarding what to do with the wildlife residing in the forest, many of the orang-utans in these forests are either killed locally or end up in trade. Likewise, forest fires associated with the El Nino Southern Oscillation Event regularly claim the lives of numerous orang-utans with at least a proportion of them ending up in trade. For the period 1971-2004 a total of 1433 orang-utans were taken in for rehabilitation at four wildlife rescue centres in Kalimantan. For the period 2000-2004 the intake of confiscated or donated orang-utans from Kalimantan alone (excluding those that arrived from other parts of Indonesia or from abroad) averages 104 individuals a year. The vast majority of these were still (very) young, another clear indication that the mothers had been killed.

Like orang-utans, the trade in gibbons is widespread throughout Kalimantan. During the survey TRAFFIC collected data on 157 gibbons that were either kept as pets or that were traded. Especially in Central and West Kalimantan, gibbons are present in almost every village or hamlet, as well as in most of the larger towns, whereas in East and South Kalimantan, fewer gibbons were observed on open display. In order to obtain the babies and juveniles, which are the age classes most frequently traded, the mother normally has to be killed. In the period 2000-2004 almost 120 gibbons were received by rehabilitation centres in Kalimantan, with equal numbers of both Bornean species. Within Kalimantan the major trade routes follow the large rivers that flow from the villages in the island's interior to the towns along the coast. The primates are transported overland or along these watercourses. As this trade is often associated with the timber trade, the animals often follow similar routes. The coastal towns are either the end destination, or, alternatively, the animals are from there transported over sea to Java and other parts of Indonesia, or indeed abroad. Trade (over land and sea) into Malaysia appears to occur from West Kalimantan (crossing into Sarawak) but less frequent in East Kalimantan (crossing into Sabah).

Prices of orang-utans and gibbons increase exponentially as the individuals are exchanged along the trade chain. Thus, for orang-utans that were bought in the source areas, their owners paid a price of IDR 243 000±123 000 (USD 27±14), but when these individuals were sold in these regions the price had increased moderately to IDR 372 000±152 000 (USD 41±17). In towns within Kalimantan orang-utans were bought by their owners for IDR 1 007 000±769 000 (USD 111±77) and sold for IDR 3 060 000±2 189 000 (USD 337±241). In Java, prices of Bornean Orang-utans are considerably higher than in Kalimantan and average IDR 3 462 000±409 000 (USD 406±48). For gibbons that were bought in source areas their owners paid a price of IDR 201 000±115 000 (USD 22±13), and when these animals were sold in these regions, the price had increased moderately to IDR 275 000±121 000 (USD 30±13). In towns within Kalimantan, gibbons were bought by their owners for IDR 535 000±402 000 (USD 59±44) and on Java, prices of both species of Bornean gibbons average IDR 691 000±213 000 (USD 76±23).

Although it proved difficult to assess the impact of trade on the wild populations, data from 2003-2004 suggest that, conservatively, within Kalimantan, Java and Bali alone the number of Bornean Orang-utans originating from Kalimantan

that appear in trade may be in the order of 200 - 500 individuals annually. The vast majority of these are (very) young individuals. Given that for each individual observed in trade, at least one other has died (i.e. its mother) this represents a significant loss to the wild population. The lowered levels of recruitment and the added losses of reproducing females are enough to bring the population in a negative spiral that will ultimately lead to its extinction. The numbers of Müller's and Bornean White-bearded Gibbon in trade constitutes at least hundreds of gibbons annually. Given that the populations of these species are still large, trade in itself does not affect a significant proportion of the wild population, although it remains an illegal activity. However, trade in gibbons usually accompanies the effects of logging, conversion, hunting and forest degradation, and these processes do have a negative impact on the two species of gibbon in Kalimantan.

Despite considerable efforts by the government and by NGOs, and despite substantial financial investment to conservation of wildlife in Kalimantan there are no indications that the past 15 years have seen a decrease in trade in gibbons and orang-utans. Although there are regional differences, trade in gibbons and orang-utans is probably as widespread as it has been at anytime. This in part results from a serious lack of co-operation between government planning agencies and the forestry departments with respect to the protection of wildlife. Large forest areas, with significant large populations of orang-utans and gibbons are continuously being converted to cash-crop plantations or are being clear-felled, leading to large numbers of gibbons and orang-utans to die or to end up in trade.

Law enforcement in Kalimantan with respect to orang-utans and gibbons is failing at different levels. Protected areas do not provide sufficient protection without adequate monitoring and law enforcement, and outside the protected area system poaching of legally protected species is frequent. Prosecution of those that violate wildlife conservation laws is absent, and despite hundreds of orang-utans and gibbons being confiscated over the past decade not a single person has been prosecuted and not a single sentence has been handed out. Government authorities in Kalimantan do not appear to consider trade in orang-utans and gibbons to be a problem; perceived levels of trade are low and the offence is not considered serious enough to warrant punishment.

In order to curb the trade in orang-utans and gibbons, to improve the wildlife conservation policies, and increase the effectiveness of law enforcement, TRAFFIC makes recommendations:

1. Trade largely occurs as a direct consequence of a reduction in the available habitat due to logging, conversion, encroachment, and arson, and addressing trade in isolation from this process is futile. Reducing trade in orang-utans and gibbons can only be achieved with a concurrent increase in the protection of the remaining forest, which must be enforced by the relevant authorities and implementing agencies of the Indonesian Government, the land concession holders and landowners.
2. Wildlife protection laws need to be enforced more effectively, and for this it is vital that protection of wildlife is recognised as being worthwhile. This recognition needs to come from the general public but also by the various government agencies, including the police, the forestry department and the courts. Any denial by responsible government authorities that trade in gibbons and orang-utans is non-existent, despite the overwhelming evidence to the contrary, is untenable.
3. The policy and the practise of voluntarily handing over protected animals during confiscations needs to be abandoned. Handing out registration letters for legally protected pets creates a loop-hole for malevolent owners and this practise needs to be stopped immediately. Persons that have their protected wildlife confiscated should be prosecuted to serve as a deterrent to other offenders.

4. A more thorough assessment of the relationship between poaching of orang-utans and gibbons and various other illegal practises (illegal logging, collection of (protected) non-timber products, etc.), in which the role of the government (both central and local) is addressed, is recommended.

5. A more stringent monitoring of the major ports in Kalimantan by the BKSDA assisted by other government enforcement agencies (police, army, Customs, etc.) is recommended.

6. An increase in co-operation between NGOs that monitor trade or that run the rescue and rehabilitation centres and the BKSDA is needed. Law enforcement and prosecution should be the task of the BKSDA and efforts have to be made to improve both effort and efficiency in this respect.

7. A change of mind-set within Indonesian society with respect to buying, selling and keeping protected wildlife as pets is urgently needed. Efforts over previous decades to discourage people from keeping and purchasing wild-caught gibbons and orang-utans have largely failed and bold and innovative approaches need to be devised as to achieve this change of mindset.

INTRODUCTION

Background on primate trade

The sale and exchange by people of wild animals and plants resources – 'wildlife trade' – is an issue at the very heart of the relationship between biodiversity conservation and sustainable development (Oldfield, 2003). Directly and indirectly, increasing demand and consumption are depleting the Earth's living natural resources at an alarming rate, even though it is well known that these resources form the biological foundation upon which human society depends (Broad *et al.* 2003). In order to understand the causes and impacts of the wildlife trade on individual species, specific ecosystems or regions, and to provide answers to the question on how these threats can be mitigated, detailed assessments of wildlife trade are needed. One approach to this end is to focus on a selected number of high-profile species that are traded in specific regions, allowing a thorough quantitative analysis of their trade. Lessons learned from these case studies can then be applied to other species, other ecosystems and other regions as to improve understanding of relationships and interactions between wildlife trade, biodiversity conservation and sustainable development.

Even though there are large differences between range and non-range countries, in general primates make excellent “flagship species” for conservation. Not only are many primate species sensitive to hunting pressures and habitat disturbances, but many people can relate to them and their complex social behaviour, and this is especially apparent for our closest relatives the apes. Both in the developed world, and also in many developing countries, primate conservation is high on the agenda. However, people living in close proximity to primate habitat may be less sympathetic towards primates than those living some distance away. If viable populations of primates and their habitats can be conserved then often the rest of the wildlife residing in the area can be saved as well. Trade in primates, be it trade in live animals or trade in primate products to be used as medicine or as ornaments, can have a dramatic impact on the last surviving populations of already rare primates (Eudey 1987, 1999).

Many primates are classified as Threatened by the IUCN Red List of Threatened Species (IUCN, 2004), with nearly half of the primate species running the risk of extinction in the foreseeable future. Among the 17 species of great apes (the orang-utans, gorillas, chimpanzees, bonobos and gibbons,) recognised by the IUCN (2004), three are listed as Vulnerable, seven as Endangered and two as Critically Endangered. One species is listed as Data Deficient indicating that the status of the species is so uncertain that any category is plausible (Note that although Data Deficient is not a threatened category, it indicates that there is inadequate information available to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status: IUCN, 2004). Clearly, the apes have faced difficult times, and the future is not looking bright. The primate species classified as at risk from extinction represent possibly the tip of the iceberg, because for a great many kinds of primates there are simply not adequate data available to assess their status.

There is a high degree of agreement on what are the most severe threats to primates. For most species habitat loss is the number one threat, and many of the additional threats are secondary and often a direct result of habitat loss (Johns, 1992, Eames & Robson, 1993, Anon., 1998b; Oates, 1999; Workman 2004). The majority of primates live in forested areas, and habitat loss is brought about by forest clearing, logging for fuel wood and timber, and forest conversion (e.g. into



Big smoke clouds from forest fires. Adaro, South Kalimantan (Borneo), Indonesia

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oil palm, pulp and paper plantations and agricultural land) (Meijaard *et al.* 2005), and degradation of the forest due to (selective) logging, collection of non-timber forest products, and forest fragmentation (Nijman 2001).

Hunting and the capturing of primates can be another serious threat to the survival of primates (Kavanagh *et al.* 1987; Robinson & Bennett 2000; Nijman 2005b; Manh Ha & Covert 2005). This threat is more selective than habitat loss; habitat loss is indiscriminate, whereas hunters and catchers target many but not all species, and there are clear preferences for certain species. Primates that are hunted are usually the larger-than-average species, or those that are less difficult to obtain or have a greater economic value. Hunting and trade are often tightly linked. For instance in order to obtain a juvenile primate that is much in demand for trade the mother first has to be killed. Alternatively, when an adult primate is hunted for its meat, the juvenile may end up in trade as opposed to the cooking pot. Likewise, the remains of primates (and other wildlife) such as bones, may have a value as it is used in traditional medicine, and as such can be traded once the animal has been eaten.

Trade in live primates involves both domestic and international markets. The international trade is largely driven by biomedical research, although trade in pets, zoo animals, and circus exhibits also contribute, as does the trade in primate parts for traditional medicines. Within many range countries the majority of live primates are traded as pets (Cowlshaw & Dunbar, 2000). The relative contribution of domestic and international trade differs greatly between regions and between species.

Data on domestic trade of primates are often difficult to obtain (Mittermeier 1987; but see Duarte-Quiroga & Estrada 2003). In some instances, where this trade occurs as a by-product of subsistence hunting, and where infants are captured when their mothers are killed, the impact of trade might be limited to the selective targeting of the mothers during normal subsistence hunting (Mittermeier 1987). However, the demand for infants may intensify hunting pressure, and if the history of primate trade shows that demand will almost always elicit a supply (Cowlshaw & Dunbar 2000).

International trade data indicate that Indonesia is one of the major exporters of 'non-wood forest products' (in this case, fauna as well as flora) and that approximately 40% of the products are imported by the EU, USA and Japan (Broad *et al.* 2003). The vast majority of primates in legal trade today come from the Old World tropics, specifically Indonesia, the Philippines, and Mauritius. Other major exporters include China, Thailand, Vietnam, Nigeria, and Colombia. The majority of primates that are exported from Indonesia are Long-tailed Macaques *Macaca fascicularis*, and, in smaller numbers, Pig-tailed Macaques *M. nemestrina* and Silvered-leaf Monkeys *Trachypithecus cristatus* (Soehartono & Mardiasuti 2002).

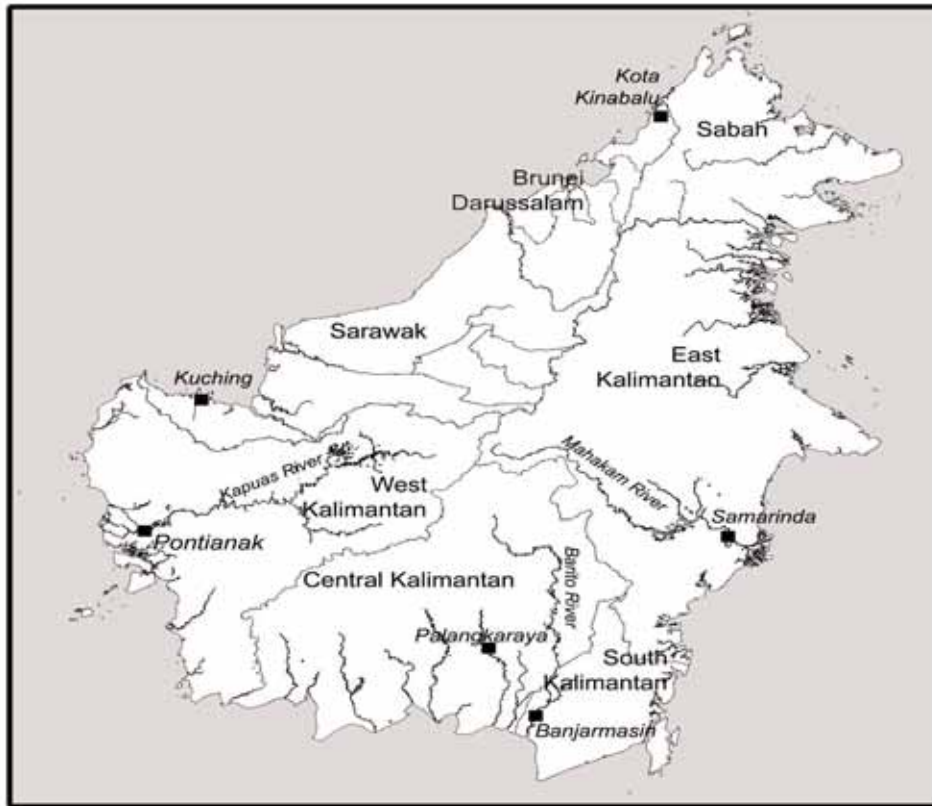
Within Indonesia, primates are traded frequently and openly at the many animal markets, and between individual actors in the trade. Many species of primate are protected in Indonesia, yet both protected and unprotected primates are openly offered for sale and primate owners often openly display their animals (Pantau 2002; Smits, 2002). Few data have been compiled on the domestic primate trade in Indonesia (Nijman 2005a; Malone *et al.* 2002ab; Anon., 1998a, 1999; Anon. 2002; Nursaid *et al.* 1996), nor on the international trade from the country, and this is especially so for the trade in those species that are legally protected (Malone *et al.* 2002a&b). This report documents the trade in two of the most readily identifiable primate families, the gibbons and the orang-utan, and focuses in particular on the trade within and from Kalimantan (the Indonesian part of the island of Borneo).

Primates on Borneo

The island of Borneo, with a size of 746 305 km² is the third largest island in the world (after Greenland and New Guinea). Administratively it is divided into the four Indonesian provinces of West, Central, East and South Kalimantan, the two Malaysian States of Sabah and Sarawak, and the Sultanate of Brunei Darussalam. The Indonesian part of Borneo

Figure 1.

Geopolitical map of Borneo, showing the four Indonesian provinces of West, Central, South and East Kalimantan, the Malaysian States of Sarawak and Sabah, and Brunei Darussalam, and provincial / state capitals.



covers some three-quarters of the total land area of Borneo. Geographically, Borneo is dominated by relatively low lying areas and over half the island lies below 150 m above sea level. In the centre of the island lies a chain of higher hills and mountains, running from south-west to the north-east. Borneo's highest mountain is Mt. Kinabalu in Sabah (4101 m), which is the highest peak between the Himalayas and the mountains of New Guinea. Borneo is dissected by a large number of great rivers; the Kapuas river (1143 km in length) to the west, the Barito River (900 km) to the south, and the Mahakam River (775 km) to the east (Fig. 1).

Kalimantan had a human population of some 11.5 million in 2000 (Anon., 2004), and an average population density of less than 17 people / km² (Table 1). All major cities are located near the coast, and population densities in large part of Borneo's interior are less than one person per km². Within large parts of the island the infrastructure is poorly developed and boats are the main mode of transportation. Settlements are also concentrated along waterways.

Levels of hunting activities are linked to accessibility. Bornean primates are hunted for food and sport, as pets and medicine and as crop pests. In localities where crops are planted near primate habitat primates can cause significant losses. Pig-tailed Macaques live in large groups, and when entering orchards or fields to feed on the ripening crops (including rice) can destroy entire crops in very short time spans. More arboreal primates (such as gibbons and orang-utans) are generally less of a problem. However, orang-utans can cause considerable damage when entering orchards, and orang-utans (and other species of wildlife) are also seen as a nuisance when entering oil palm plantations.

Many rural people depend on wildlife meat for their protein and primates are frequently eaten. Hunting is deeply ingrained into almost all cultures (Bennett *et al.*, 1994). With few traditional controls (i.e. both 'taboo' type

prohibitions and indigenous wildlife management systems) and the relatively easy availability of shotguns and cartridges (more so in the Malaysian States than in Indonesian Kalimantan), the effect on primate populations is devastating. Although largely protected by law, in practise the only safeguard for most species is inaccessibility. With the spread of logging roads, and improved river transport no areas are now safe (Bennett *et al.* 1994).

With respect to the hunting of primates, and indirectly the trade in primates, it is relevant to note that human attitudes towards primates differ greatly between religious groups, and that the distribution of religious groups differs within Borneo. Islamic religious tenets restrict the consumption of primates, whereas in Christianity and Animism few dietary restrictions prevail. The coastal regions of Borneo are mostly inhabited by people of ethnic Malay origin who have adopted Islam as their main religion. Most of Borneo's interior is inhabited by people of the Dayak or Punan tribes,



Credit: Ian M. Hilman/Yayasan Titian

Skulls of primates and ungulates in Bengkayang District, West Kalimantan (Borneo) Indonesia

many of which have been converted to Christianity, although animistic beliefs are still widespread (Cleary & Eaton 1992). Over the past 100 years there has been a heavy out-migration from the interior towards more coastal areas, generally in the quest for better health facilities, better education, better income and living conditions (Sirait *et al.* 1994) bringing people from different cultural and religious backgrounds in closer contact. At a different scale, transmigration (in the present context mostly involving people from Java, Sumatra and Sulawesi transmigrating to (rural) Borneo) has done the same. In general, possibly partially as a result of difference in religion, hunting of primates is rare or absent in many coastal areas on Borneo but it is widespread in the island's interior. In large parts of Borneo, all primates that constitute more than a mouthful of meat (involving all species with the exception of the nocturnal Slow Loris *Nycticebus coucang*. and the Western Tarsier *Tarsius bancanus*) are

frequently eaten (Caldecott, 1988, 1992). Apart from being eaten, primates, from the small Slow Loris to the larger gibbons and (young) orang-utans, are kept as pets (and may be killed and eaten when the owner gets bored with it) or can be used in traditional medicine.

Borneo supports the largest expanse of lowland evergreen rain forest in western Indo-Malayan region. In Kalimantan alone some 267 000 km² is still under forest, or about 50% of the land surface (Fuller *et al.* 2004). The forests are characterised by a high diversity of dipterocarps, the most important timber species in the region (Whitmore, 1984). Timber is a major source of revenue for the Malaysian States and for Kalimantan. Oil-rich Brunei has less need to exploit its forest for timber. Large-scale exploitation timber began at the end of the 1960s; in 1967 all Indonesian forests were declared property of the State. Some 90% of all forest (excluding conservation areas) in Sarawak is under concession (MacKinnon *et al.*, 1996) whereas the total area of forest under concession in Kalimantan is actually larger than the total area of remaining forest (Rijksen & Meijaard, 1999). Aside from timber production, vast areas are cleared every year for agriculture, plantations, human settlements and transmigration. Lowland forests in particular are directly threatened by these practises due to their accessibility and its higher soil fertility than higher-altitude forests. Undisturbed tropical rainforest is normally highly resistant to fire because of low loads of available fuel, low fuel-energy content and high humidity even during drought. Although forest fires are a natural phenomenon in Borneo (particularly in the lowland peat swamp areas where peat keeps burning under the surface after visible flames have been extinguished) their frequency of occurrence was until recently very low. It is thought that few, if any, rainforest species are adapted to recurrent fires. Fire became a significant threat to the rainforest in Borneo only recently because of a positive feedback between logging and fire occurrence (Siegert *et al.*, 2001). In the past few decades, forest fires associated with the El Nino Southern Oscillation (ENSO) Event have taken an immense toll on remaining forest areas. During 1982-1983 fires, some 50 000 km² of forest were burnt, and, although figures vary widely, the 1997-1998 fires resulted in the loss of 30000 km² (Fuller *et al.* 2004). Less than 10% of the forests on Borneo are formally protected as conservation

Table 1.

Human population in Kalimantan and Indonesia as a whole country.

Region	Population in 2000 (x1000)	Population density (ind/ km ²)	Population growth 1990-2000 (%)
West Kalimantan	4,034	27	2.3
Central Kalimantan	1,857	12	3
South Kalimantan	2,985	69	1.5
East Kalimantan	2,453	11	2.8
Indonesia	206,264	109	1.5

Source: Badan Pusat Statistik 2004

forest) and most of this is concentrated in the mountains. Borneo harbours a very rich primate fauna, with representatives of five families, and a total of 14 species (Table 2). In this report the taxonomy of Groves (2001) is followed; other taxonomies may list more or fewer species. On mainland Borneo, almost two-thirds of the primates are endemic to the island, and several species are restricted to parts of the island only. All species found on Borneo occur

Table 2

Primates in the Borneon faunal region and their IUCN status

Family	Species	IUCN status	Notes
Loridae			
	Slow Loris <i>Nycticebus coucang</i>	Data Deficient	
Tarsiidae			
	Western Tarsier <i>Tarsius bancanus</i>	Data Deficient	
Cercopithecidae			
	Long-tailed Macaque <i>Macaca fascicularis</i>	Lower Risk / near threatened	
	Pig-tailed Macaque <i>Macaca nemestrina</i>	Vulnerable	
	Natuna Leaf Monkey <i>Presbytis natunae</i>	Not evaluated	Endemic Bunguran Island
	Sarawak Leaf Monkey <i>Presbytis chrysomelas</i>	Not evaluated	Endemic Borneo
	Bornean Leaf Monkey <i>Presbytis hosei</i>	Data Deficient	Endemic Borneo
	White-fronted Leaf Monkey <i>Presbytis frontata</i>	Data Deficient	Endemic Borneo
	Red Leaf Monkey <i>Presbytis rubicunda</i>	Not evaluated	Endemic Borneo
	Silvered Leaf Monkey <i>Trachypithecus cristatus</i> *	Data Deficient	
	Proboscis Monkey <i>Nasalis larvatus</i>	Endangered	Endemic Borneo
Hylobatidae			
	Bornean White-bearded Gibbon <i>Hylobates albibarbis</i>	Not evaluated	Endemic Kalimantan
	Müller's Gibbon <i>Hylobates muelleri</i>	Lower Risk / near threatened	Endemic Borneo
Hominidae			
	Bornean Orang-utan <i>Pongo pygmaeus</i>	Endangered	Endemic Borneo

* Listed as *Trachypithecus villosus* by IUCN (Anon. 2004b)

Source: Groves, 2001, IUCN (Anon., 2004b).

in Indonesia (MacKinnon 1987). Most of the island endemics are not political endemics, i.e. they are found in at least two of the countries that make up Borneo (Brunei Darussalam, Indonesia, Malaysia and). The exceptions are the Bornean White-bearded Gibbon that is endemic to the Indonesian part of Borneo, and the Natuna Leaf Monkey *Presbytis natunae* that is found only on the Indonesian island of Bunguran, off Borneo's northwestern tip (Lammertink *et al.* 2003). As Kalimantan covers some two-thirds of the island and most remaining Bornean forest is found in Kalimantan, for many species a disproportionately large part of their populations are found within Indonesian territory, and hence Indonesia bears great responsibility for safeguarding the survival of these species.

Bornean gibbons and orang-utans

Gibbons live in small cohesive family groups consisting of an adult male and female and up to four of their offspring (Leighton 1987; Geissmann, 1991). Maturity is reached after 6-8 years (or possibly already as early as 5 years (Geissmann, 1991), and a single young is born in intervals of between 2.5-3.5 years. In the primary forest of Borneo, gibbons can occur in densities of some 2-3 groups per km², with lower densities in degraded forest (Chivers, 1992). Gibbons do not occur outside forest areas. Two species of gibbons occur on Borneo, which are:

Bornean White-bearded Gibbon is found in the area bordered by the Kapuas River in the north and the Barito River in the east (Fig. 2). Formerly it was generally considered a sub-species of the Agile Gibbon *H. agilis* that occurs on Sumatra and parts of Peninsular Malaysia, but consistent differences in morphological (Groves, 2001), vocal (Geissmann, 1995) and genetic characters (Garza & Woodruff 1992; Hirai *et al.* 2005) clearly suggest the Bornean White-bearded Gibbon represents a unique evolutionary unit. Within the range of the species, significantly large populations occur in three protected areas: Gunung Palung National Park, Tanjung Puting National Park, Bukit Baka-Bukit Raya National Park. The former two especially have suffered from illegal logging following the period after the economic crisis that hit Indonesia in 1997-1998, and the period of political and social turmoil that followed. The Bornean White-bearded Gibbon has not yet been assigned to a particular threat category by IUCN (Anon., 2004b) as the species is included as a subspecies of the Agile Gibbon.

Müller's Gibbon is endemic to the island of Borneo, where it shows an allopatric distribution with the Bornean White-bearded Gibbon, i.e. north of the Kapuas River and east of the Barito River. As such it has been recorded from Sarawak, Sabah, Brunei, East and South Kalimantan, and small parts of West Kalimantan (Fig. 2). Outside Indonesia significant populations of this species occur in the Lanjak Entimau National Park, Gunung Mulu National Park, and Batang Ai National Park in Sarawak, (Bennett *et al.* 1987), Tabin Wildlife Reserve, and the Middle Kinabatangan wildlife sanctuary in Sabah, and in Temburung, Brunei Darussalam. Within Kalimantan, large protected areas in which Müller's Gibbon is present are Kayan Mentarang National Park and Betung Kerihun National Park. On paper the species is also well-protected in areas like Kutai National Park and the Muara Kaman strict nature reserve, but virtually no forest habitat is left in these reserves and without it most gibbons have perished. Müller's Gibbon is listed as Lower Risk / near threatened by the IUCN (Anon., 2004b).

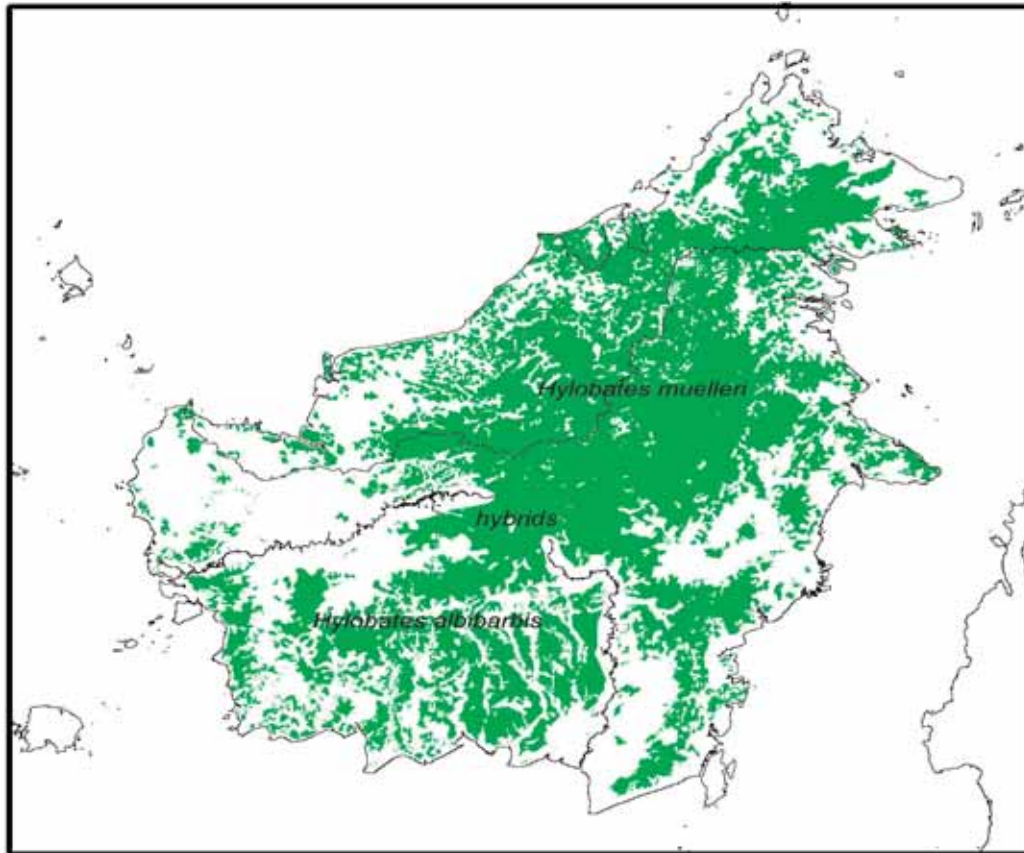


Credit: Julia Ng/TRAFFIC Southeast Asia

Müller's Gibbon kept as a pet by a villager living in Sintang District, West Kalimantan (Borneo) Indonesia

Figure 2.

Distribution of Müller's Gibbon *Hylobates muelleri* and Bornean White-bearded Gibbon *H. albibarbis*, with the Kapuas and Barito Rivers separating the two, and the general area where the two species hybridise



Source: Ed Colijn (Indonesian Nature Conservation Newsletter) ¹

The orang-utans are the only Great Apes that are confined to Asia. Although at present their distribution is restricted to the islands of Sumatra and Borneo, Pleistocene fossils indicate that the species occurred from Indochina south to Java (Rijksen & Meijaard, 1999). There are two extant species, i.e., the Sumatran Orang-utan and the Bornean Orang-utan (Groves, 2001)². Orang-utans are more arboreal and generally more solitary than the other apes. Adult females are often accompanied by their offspring, while most adult males only interact with oestrus females. Orang-utans have one of the most prolonged developments of any mammal and sub-adult males, although sexually mature, may not breed until they are between 15-20 years of age.

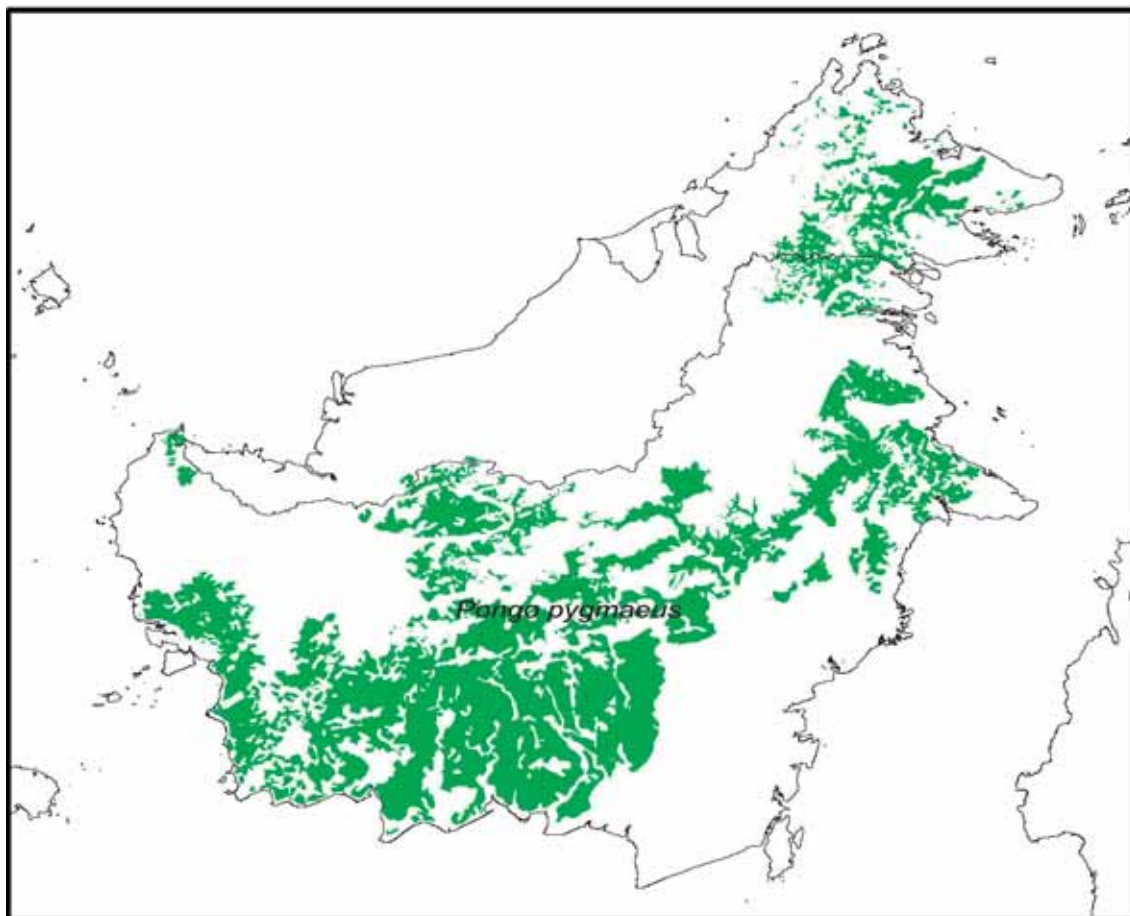
¹ The distribution maps of gibbons and orang-utans were prepared by Ed Colijn on the assumption that all remaining forest polygons that offered suitable habitat (e.g. dipterocarp forest below 1000 m above sea level, or peat swamp forest) within the range of the respective species were indeed inhabited. The vegetation map was based on the Biodiversity Information Monitoring System (BIMS) data as presented by MacKinnon (1997). The forest cover on Borneo in BIMS is a composite from various sources: data for Kalimantan is based on the Regional and Physical Planning Program for Transmigration maps (Anon. 1990), for which the data were compiled over a number of years, commencing in 1984, and updated with data from the Tropical Ecosystem and Environment Observations by Satellite (TREES) project; data from Sarawak and Sabah were based on TREES data combined with aerial reconnaissance ground-truthing for Sabah; data from Brunei were based on Farmer *et al.* (1986). As such the distribution maps depict the situation roughly in the period mid-1980s and mid 1990s.

² For many years, only a single species of orang-utan was recognized, known as *Pongo pygmaeus*, with two subspecies, *P. p. pygmaeus* from Borneo and *P. p. abelii* from Sumatra. Consistent differences between the orang-utans from Borneo and Sumatra in amongst others mtDNA (e.g., Zhi *et al.* 1996; Xu & Arnason 1996; Warren *et al.* 2001), karyotype (Seuanez *et al.*, 1979), and morphology (e.g., MacKinnon 1973) suggest that the two are best treated as distinct species. Molecular data indicates a prolonged separation between the two island populations (Janczewski *et al.* 1990; Xu & Arnason, 1996; Zhi *et al.* 1996, see however Muir *et al.* 1998, 2000), in the order of 1.1 million years (Warren *et al.* 2001) to 1.5 million years (Zhi *et al.* 1996). Hence, there is sufficient support to justify two separate species of orang-utan: *Pongo abelii*, the Sumatran Orang-utan and *Pongo pygmaeus*, the Bornean orang-utan (Groves, 2001). Warren *et al.* (2001) found considerable variation in mtDNA of orang-utan populations on Borneo, with four geographic clusters (Southwest and Central Kalimantan; Northwest Kalimantan and Sarawak; Sabah; East Kalimantan). These clusters correspond with a multivariate analysis on eight cranometric variables (Groves 2001), albeit that specimens from Sabah and East Kalimantan cluster together, and the differences between specimens from this cluster and those from Northwest Kalimantan is not clear-cut. Like Warren *et al.* (2001), Xu & Arnason (1996) observed considerable genetic variation within Bornean populations without, however, a clear relationship to geography. In contrast, Muir *et al.* (1998; 2000) did find a large genetic variation among orang-utans from Sumatra, but not from Borneo. Despite these uncertainties, Groves (2001) recognised three subspecies from Borneo: *Pongo pygmaeus pygmaeus* (Western Borneo), *Pongo pygmaeus wurmbii* (Southern Borneo), and *Pongo pygmaeus morio* (Eastern Borneo).

Likewise, females do not start reproducing early, and mostly, their first infant is born when they are between 12-15 years old. Birth intervals are approximately eight years, but depending on environmental and physical conditions, may range from 5-10 years (Yeager, 1999). The Bornean Orang-utan is confined to parts of the island of Borneo generally below altitudes of c.500m above sea level (Fig. 3). There are three subspecies of the Bornean Orangutan, which are *Pongo pygmaeus pygmaeus*, *P.p. morio* and *P.p. wurmbii* (Groves, 2001). The main threats to the species are continuing deforestation and increasingly, the forest fires associated with the El Nino Southern Oscillation Event (Singleton *et al.*, 2004; van Schaik *et al.* 2004). The species is listed as Endangered by the IUCN Red List (Anon., 2004b).

Figure 3.

Distribution of orang-utans *Pongo pygmaeus* on Borneo (see footnote Fig. 2). Note the (historic) absence of the species in South Kalimantan and East Kalimantan south of the Mahakam River.



Source: Ed Colijn (Indonesian Nature Conservation Newsletter)

Protection of gibbons and orang-utans in Indonesia

Protection of primates in Indonesia began with the prohibition of hunting and killing certain species by Ordinance (*Dierenbeschermingsordonantie*) in 1925, when the country was still under the Dutch colonial government. Additions to this Ordinance came into effect in 1931 and 1932, which made it illegal to catch alive, to disturb, to trade alive or dead, or to hold certain species of primate in captivity. Included in this limited list were all species of gibbon (listed as Hylobatidae) and the orang-utan (included as *Simia satyrus*). Gibbons and orang-utans are also protected under *Undang-undang Republik Indonesia No.5 Tahun 1990 tentang Konservasi Sumber Daya Alam Hayati dan Ekosistemnya* (Act of the Republic of Indonesia No.5 of 1990 concerning Conservation of Living Resources and their Ecosystems), as well as various other decrees including *Peraturan Pemerintah No 7, 1999*.

Act No 5 states that: “Any and all persons are prohibited to:

- Catch, injure, care for, transport, and trade in a protected animal in a live condition
- Keep, possess, care for, transport, and trade in a protected animal in a dead condition
- Transfer a protected animal from one place to another, within or outside Indonesia.
- Trade, keep or possess skin, bodies, or other parts of a protected animal or the goods made of parts of the animal, or transfer from one place in Indonesia to another, within or outside Indonesia'.

Penalties that can be imposed when these laws are broken can total fines of up to IDR 100 000 000 (USD 10 427 at 2005 rate) and imprisonment for up to five years.

An assessment trade in orang-utan and gibbons in Kalimantan necessitates an understanding of the comparative protection levels these animals receive in neighbouring countries, especially since the orang-utan is also found in the Malaysian States of Sabah, Sarawak and Müller’s gibbon in Sabah, Sarawak and Brunei Darussalam. The legislations guarding orang-utans and gibbons are different in Sabah and Sarawak, as explained below:

In Sabah, the orang-utan is categorized as Totally Protected and Müller’s Gibbon as Protected under the *Sabah Wildlife Conservation Enactment 1997*. Under this enactment, a person cannot hunt, keep the animal or the animal product of a Totally Protected species. A Protected species may be hunted under the authority of a license issued by the Wildlife Department and can be possessed (including animal parts) when it is lawfully imported or obtained under the authority of a valid license or permit.

Any person who hunts a Totally Protected animal, like the orang-utan shall be liable on conviction to a term of imprisonment for not less than six months but not exceeding five years and for a Protected animal, to a fine of MYR 50 000 (USD 13 293 at 2005 rates) or to imprisonment for five years or both.

However, when hunting a Protected species, no person, except with the authorization of the Director of the Sabah Wildlife Department, shall:

- hunt any young animal which is still suckling
- hunt any female animal when it is pregnant, in a condition indicating that it is suckling a young or accompanied by an immature young.

In Sarawak, both orang-utan and Müller’s Gibbon are listed as Totally Protected Animals under the *Sarawak Wildlife Protection Ordinance 1998*. The Wildlife Ordinance states that: “Any person who hunts, kills, captures, sells, offers for sale or claims to be offering for sale, imports, exports, or is in possession of, any Totally Protected animal or any recognizable part or derivative thereof, except in accordance with the permission in writing of the Controller for scientific or educational purposes or for the protection and conservation of such protected animal, shall be guilty of an offence.”

For penalty, if the Totally Protected species concerned is an orang-utan, the person will be imprisoned for two years and fined MYR 30 000 [USD 7 895.78 at 2005 rate)

In Brunei Darussalam, orang-utans are classified as a Protected species under the *Laws of Brunei, Revised Edition 1984, Chapter 102, Wildlife Protection*. It is stated that, “No person shall hunt, kill or capture a Protected animal otherwise than under the accordance with the conditions of a licensed issued under this act”

The penalty is imprisonment for one year and a fine of BND 2 000 [USD 1 203 at 2005 rate].

International treaties

Indonesia (1978), Malaysia (1978) and Brunei Darussalam (1990) are all signatories to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). All species of gibbon and orang-utan are listed on Appendix I which generally prohibits commercial international trade of these species, their parts and derivatives, among contracting Parties, except under specific circumstances. It is the responsibility of the Directorate General of Forest Protection and Nature Conservation, as Indonesia's Management Authority for CITES, to ensure that illegal international trade of these species is prevented. For Brunei Darussalam, the Management Authority is the Director of Museums. On the Malaysian side, the Sabah Wildlife Department is the Management Authority for Sabah while in Sarawak, the Management Authority is the Sarawak Forestry Corporation.

Rehabilitation and reintroduction of gibbons and orang-utans

Much of the information available on the conservation status of the orang-utans, and in particular the impact of trade and the effects of habitat conversion and forest fires, derives from several site-specific projects focusing on rehabilitation and/or reintroduction. For Borneo the first attempts to rehabilitate orang-utans were conducted in the Bako National Park, in Sarawak, in the early 1960's. In 1964 a rehabilitation centre was established in the Sepilok forest reserve in Sabah. Shortly after, the Bako rehabilitation centre closed and the animals were transferred to Sepilok. In 1977 a new rehabilitation centre was established in Sarawak near the Semengok botanical gardens.

The first rehabilitation centre in Indonesian Borneo was set up in 1971 at Camp Leakey in Tanjung Puting National Park, Central Kalimantan. Rehabilitated orang-utans were released in the population of wild orang-utans in the park, first only at Camp Leakey but later at two other stations (Tanjung Harapan and Pondok Tandui) as well. From 1991 onwards the Indonesian authorities no longer allowed the release of orang-utans in Tanjung Puting.

In the 1970-1980's a small number of cages were available for orang-utans near the Teluk Kaba guard post in Kutai National Park, East Kalimantan, and an unknown number of orang-utans were released in the national park during this period. As in Tanjung Puting, Kutai had a resident population of wild orang-utans. The Teluk Kaba rehabilitation centre was officially closed in 1991. A year later the Wanariset reintroduction centre in East Kalimantan became active, and in 2001 a second centre was founded in Nyarumenteng, Central Kalimantan. Unlike the situation in Kutai and Tanjung Puting the rehabilitated orang-utans were not released in a population of wild orang-utans, but in forest areas where there was no resident population, i.e. Sungai Wain in East Kalimantan (1992-1996), and Meratus in East Kalimantan bordering South Kalimantan (1997-2001), and Kaja Island and Palas Island in Central Kalimantan (2001 onwards).

Gibbon rehabilitation and reintroduction in Borneo has received much less attention than that of orang-utans. Between 1976 and 1988 the Semengok rehabilitation centre in Sarawak received 122 Müller's gibbon to be released in the nearby forest, 90% of which did not survive long after release (Bennett, 1992). In this period in Kalimantan, no official rehabilitation programme was in operation, but many of the above-mentioned orang-utan rehabilitation programmes received gibbons as well, and at several localities in Kalimantan these were released. The authorities have also handed over confiscated gibbons to individuals with the request to rehabilitate these, even if the proper facilities were completely lacking. In 1992 Yasuma (1994) received 20 gibbons from the forestry department that were, after a health-check, released in the Bukit Soeharto Grand Forestry Park, East Kalimantan. Although attempts were made to monitor the released gibbons, after a few months the gibbons were no longer seen, and their fates remain unknown. In the surrounding of the Bukit Soeharto Grand Forestry Park, gibbons have also been released in Bukit Bankirai, Kutai

National Park, and Wartono Kadri, all without proper pre-release assessments nor post-release monitoring. According to the BKSDA in Samarinda, on occasions, permits are still handed out to the University of Mulawarman's Forest Rehabilitation Project to release gibbons in their study area in the Bukit Soeharto Grand Forestry Park. As such, they have also received permits to keep caged gibbons on their premises.

As noted by Bennett (1992) there have been gluts of captive and confiscated gibbons throughout the gibbon's range and all these areas also have forests where gibbon populations have been hunted to extinction locally. Wildlife authorities cannot cope with the numbers of gibbons in captivity and gibbons are often (sometimes secretly) released in order to free cage space. Although humans derive personal gratification from releasing other animals (gibbons, orang-utans, as well as other species) back into their natural environment, this may well be misguided benevolence.

In 1999, the Kalaweit programme was started in Central Kalimantan, with the specific aim of rehabilitating gibbons. The centre, which is situated within the range of the Bornean White-bearded Gibbon, receives this species and the Müller's Gibbon. Two pairs have been released on Mintin Island, surrounded by rivers and without a resident gibbon population.

Objectives of the assessment

This is the second TRAFFIC report focusing on the direct factors contributing to the decline in orang-utan and gibbon populations, including the demand for these primates as pets, and the hunting for bush meat and medicinal purposes. The first TRAFFIC report dealt with the islands of Java and Bali, as the main centres of trade in Indonesia and this present report deals with Kalimantan, the Indonesian part of the island of Borneo, as one of the main source areas.

In this assessment, "trade" is not only identified as the buying and selling of goods – in this case gibbons and orang-utans – in exchange for money and / or other items but also includes those instances where people claim to have received these species as presents or gifts. The rationale is that firstly that even though many owners claim that they have received their pet gibbon or pet orang-utan as a gift without any exchange of money or goods, few people are truly altruistic and as such most gifts can be considered payments of a sort, and secondly, that it is not verifiable whether or not animals were purchased or received as gifts. Likewise, orang-utans or gibbons that are kept by the people that caught them in the forest, are included in this assessment.

Information regarding the trade in gibbons and orang-utans on Kalimantan is lacking and the available information has not yet been consolidated. TRAFFIC's overall goal for this study was to create an overview on all aspects of the trade and 'uses' of these species throughout Kalimantan, with connection to other parts of Indonesia, and present it to the relevant authorities as a report with recommendations for action to improve conservation efforts for these primates. More specifically, the objectives for the present report are to:

- (a) Gather, compile and analyse trade dynamics in Kalimantan of the Bornean orang-utan and both species of gibbon occurring on Borneo. This includes data on sources, destinations, availability, current prices, and turnover of these species in the pet trade.
- (b) Document the number of gibbons and orang-utans that are in zoological gardens and rescued / confiscated from the pet trade and placed in rehabilitation or wildlife rescue centres throughout Kalimantan.
- (c) Determine the extent of the trade in gibbons and orang-utans in Kalimantan other than that for pets, e.g., ornamental and (traditional) medicinal purposes or the meat trade.

(d) Develop practical recommendations based on the findings of the research carried out in order to support efforts aiming to ensure that trade does not pose a threat on the species' survival.

METHODS

Survey of wildlife markets and private owners

In the periods June-September 2003 and June-October 2004 data were collected on trade in gibbons and orang-utans in Kalimantan (Fig. 4). Three (2003) and five local assistants (2004) were appointed to conduct additional surveys in each of the four provinces, covering the entire distribution range of the three species of interest within Indonesia.

Wildlife markets (*pasar burung / pasar satwa*) are mostly present in the larger towns only, and are generally small and comprise just a few shops. Likewise pet shops are mostly present in the larger towns only. Many vendors sell mostly unprotected species, but due to various reasons, including the general absence of law enforcement, many protected species are openly offered for sale. Until only a few years ago many of the protected primates were also offered openly for sale but nowadays in many wildlife markets few protected primates are openly displayed (Malone *et al.* 2002b; Anon., 2002; Nijman 2005a).

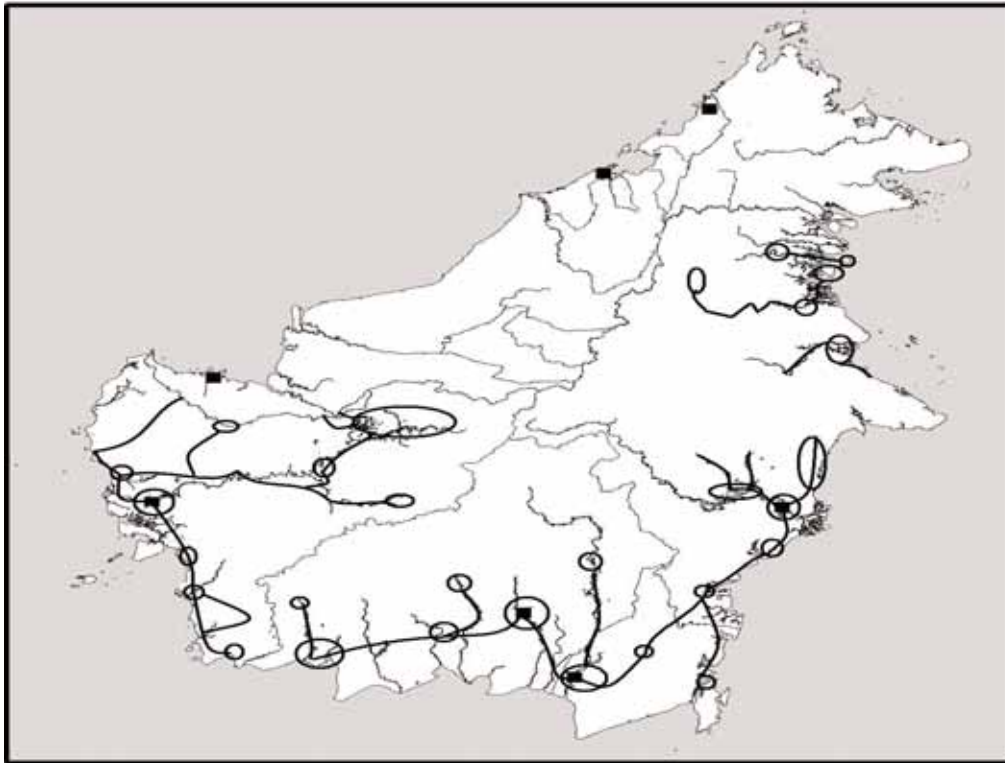
When wildlife markets were visited, special attention was given to those stalls and those traders that specialised in primates (mostly Long-tailed Macaques *Macaca fascicularis* and Pig-tailed Macaques and various *Presbytis* leaf monkeys, i.e. species that are not protected by Indonesian law but also legally protected species such as Slow Loris *Nycticebus coucang*) and protected birds as it was expected that these vendors would most likely be willing to sell gibbons and or orang-utans, or would have access to them.

In all towns and villages TRAFFIC searched for private owners that kept gibbons or orang-utans as pets. From the owner we tried to obtain data on the history of the animal, where and how it was acquired, and at what price. Aware of the researchers' interest, these single individuals were then often offered for sale in which case the requested price was noted. During the survey no gibbons or orang-utans were purchased.

Data on gibbons and orang-utans in trade or in private hands was obtained from various NGOs, students and researchers that were known to have collected data at wildlife markets or that were otherwise involved in monitoring wildlife trade. These included, amongst others, Yayasan WWF-Indonesia (Jakarta, Pontianak, Palangkaraya, Tarakan), BOS (Palangkaraya), ProFauna (Palangkaraya), Riak Bumi (Pontianak), LORIES, BEBSiC (Samarinda), The Nature Conservancy (Samarinda and Berau), Conservation International (Jakarta), and Tropenbos International Kalimantan Project (Balikpapan).

Figure 4.

Borneo, and the areas where the 2003 and 2004 surveys were conducted and the main routes travelled. In addition to these general survey areas, numerous smaller villages were visited while travelling along roads and rivers to and from survey areas.



Public and private zoological gardens

During the survey, all larger zoological gardens were visited, i.e. Kebun Raya Samarinda and Kebun Binatang Gunung Bayan (East Kalimantan), Kebun Binatang Pontianak and Taman Ria Wisata Agro (West Kalimantan).

In zoos, data on the occurrence of gibbons and orang-utans was firstly collected by simply purchasing a ticket to check what kind of animals were on display. When keepers were present these individuals were informally questioned on the total number of individuals present in their zoo (i.e. including those that were not currently on display), their origin, whether or not breeding had been successful, etc. Only later was a more formal request made to the zoo to obtain data on the origin of their stock.

Although many zoos, both staff and officials, were sympathetic to the aims of the survey and as such were in principle willing to provide data, detailed information on the precise origin of each of the orang-utans or gibbons present was rarely available. As a second-best option, TRAFFIC tried to elicit data on the basis of what the staff recalled, and in this way information became available for some of the individuals.

Wildlife rescue centres and reintroduction programmes

Data were obtained from all five rehabilitation centres or wildlife rescue centres, i.e. three specialising on orang-utans (Wanariset I in Samboja, East Kalimantan; Nyarumenteng near Palangkaraya, Central Kalimantan, and Orangutan

Foundation Indonesia in Pekalan Bun, also in Central Kalimantan), one on gibbons (Kalaweit near Palangkaraya, Central Kalimantan) and one that act as a transit centre for various species of wildlife (GCOCP in Ketapang, West Kalimantan). With the exception of the Orangutan Foundation Indonesia, where data were only available for 2002-2004, these centres provided data on all orang-utans and gibbons at their disposal from the time these centres started operating. The rehabilitation centres or wildlife rescue centres take in gibbons and orang-utans that have been confiscated (or 'donated') from traders and the public. In some cases, especially for orang-utans, these centres actively catch individuals trapped in tiny forest remnants that are to be converted or individuals that are encountered in gardens or plantations. Individuals that arrive at these rehabilitation centres as a result of these so-called "rescue" operations strictly do not form part of the trade chain (although a large part of them would perhaps have ended in trade if the rehabilitation centres had not intervened). As such these individuals were not included in the analysis.

Department of Forestry

Data on the number of confiscated gibbons and orang-utans in the last ten years, the results of the legal follow-up of these confiscations, if any, and the number of pet gibbons and orang-utans that were registered at their office were requested from the four regional branches of the office for the conservation of natural resources (BKSDA), i.e. Samarinda in East Kalimantan, Banjarbaru in South Kalimantan, Palangkaraya in Central Kalimantan, and Pontianak in West Kalimantan. In addition regional offices were visited in Ketapang, Pekalan Bun, Tenggarong, Tanjung Redeb, and Sintang. Interviews were held with the heads of these offices, or when these were not available, their deputies. Prior to the visit a written request was made by Widodo S. Ramono, the then Director of the Biodiversity Conservation office of the Directorate General of Forest Protection and Nature Conservation (KKH-PHKA) explaining the aims of the assessment, and the need to co-operate. In this letter it was also explained that none of the data were going to be published without consulting the Biodiversity Conservation office first. Most of the regional offices had at least part of the data at their disposal and these were handed over unhesitatingly. Data were also requested on the number and origin of gibbons and orang-utans that had been brought to the wildlife rescue centres and zoological gardens, with varying degree of success.

Additional data

A search was conducted in the Indonesian Nature Conservation Database (maintained at the Pusat Informasi Lingkungan Indonesia, Bogor), to find news-items, and newspaper articles that relate to the trade in gibbons and orang-utans in Kalimantan, or that originated from Kalimantan. All items that did not explicitly referred to this region were dismissed. An internet search (www.google.com) was conducted with the key words: gibbons, Hylobates, orang-utans, Pongo, Kalimantan, Borneo, Indonesia, trade, in various combinations, and the Web of Science (<http://isi4.isiknowledge.com/>) and the primate literature database of PrimateLit (<http://primatelit.library.wisc.edu>) was consulted to search for scientific reports on the trade in gibbons and orang-utans.

In the course of the study any additional information in the form of unpublished reports, unpublished bachelor's theses, and unpublished data were solicited from those individuals that were identified as most likely to have knowledge of the presence of these sources.

Analysis

All the data were entered in a database for this report, with each of the individuals receiving entries on origin, current location, dates, prices, fate, legal follow-up in case of confiscations, if any, and source of the information. In zoos some of the species were misidentified or were identified only to the generic level. Likewise sometimes gibbons were not identified to the species level, or were only tentatively identified pending more study. The most obvious misidentifications were either omitted from the analysis, or pooled under a more general entry (i.e. *Hylobates* spp.).

In order to gain insight in the trade routes for orang-utans and gibbons within Kalimantan and from Kalimantan to other regions within and outside Indonesia, each of the eight surveyors drew all known (partial) routes on a large map of each of the four provinces. Information was obtained from owners of orang-utans and gibbons, from the traders, and from others that have monitored wildlife trade in Kalimantan.

All prices were converted to USD at the appropriate exchange rate at the time the data were collected. For this, the foreign currency exchange website: <http://www.oanda.com/convert/classic> was used. In addition, the local currency, Indonesian Rupiah (IDR) is listed next to the converted USD price. Unless otherwise indicated all prices noted in this report are converted to 2004 USD rates.

By its very nature, illegal trade is a difficult issue to document. Especially when information is being solicited from secondary sources it can be hard to evaluate the veracity of the data. Many of the people interviewed or spoken to were very open and clearly spoke their mind, but others were much more cautious and did not reveal all that they knew. Most of the interviews and discussions were conducted in Bahasa Indonesia, and only a few in English or the author's native Dutch. All attempts have been made to present the data collected in an objective manner, however for some parts of this report, few hard data were available and what is presented is thus partially based on the author's own interpretation of the available information. Wherever occurring within the text, this has been made explicit.

RESULTS AND DISCUSSION

The orang-utan

General structure and numbers in trade

The trade in orang-utans is widespread throughout Kalimantan, even in areas where the species is not present in the wild. Unlike the situation in Java, where trade is very much concentrated in a relative small number of wildlife markets (the so-called “bird markets”), the buying and selling of orang-utans on Kalimantan is much more diffuse. Within the area where orang-utans occur in the wild, and especially in the more interior parts of Kalimantan, essentially all forest-dwelling people know the value of an infant orang-utan. Law enforcement is generally lacking, there is no moral obligation *not* to kill or capture an orang-utan and thus when the opportunity arises to obtain an infant or juvenile orang-utan, it is usually acted upon. As such, again more so in the interior than along the coast, a young orang-utan represents money and can be traded as a commodity. In villages, many keep, at one time or another, an orang-utan as a 'pet', not necessarily due to any fondness for the animal (although there may be) but because it represents something that can be sold or bartered.

A baby orang-utan that has been caught (invariably after its mother has been killed) and taken out of the forest may be kept as a pet to be sold later when the opportunity arises. It may alternatively be sold as a pet directly within the village or hamlet where the hunter resides, or it can be sold to people from other areas. From such a collection point, the orang-utan can be brought to even larger villages and towns and as the animal moves into the trade chain the traders involved are increasingly professional and the orang-utan is no longer a 'pet' but a commodity. Alternatively, a professional trader may travel to a remote area and buy or order young orang-utans from local villagers. The widespread occurrence of 'pet' orang-utans guarantees a steady supply. It is almost impossible to 'store' a number of orang-utans at one facility for longer than a few days at the most, and hence orang-utans are kept with private owners until all arrangements have been made to transport animals to future buyers. It is therefore difficult to distinguish between 'professional' traders and mere villagers that keep orang-utans as 'pets', and as such all 'participants' – be it professional traders or mere 'pet-owners' – are vital in maintaining the trade chain.

During the survey, in the province of West Kalimantan in 2003-2004 a total of 62 orang-utans were reported or recorded in private hands. During the same period, data for only eight orang-utans from Central Kalimantan was recorded, but many more were reported to have been traded within the province. Reported or recorded orang-utans in private hands in East Kalimantan numbered a low four, and no recent information on orang-utans in private hands was available from South Kalimantan (Table 3). However, for East and South Kalimantan data were collected from hunters, traders, middlemen on orang-utans being killed, caught, offered for sale, sold, and transferred to other areas. Although often reliable these reports were difficult to verify.



Credit: Ian M. Hihnan/Yayasan Titian

Pet orang-utan in Bengkayang District, West Kalimantan (Borneo), Indonesia

Table 3

Recorded and reliably reported cases of captive orang-utans in Kalimantan in the period 2003-2004.

Province Regency	Recorded	Reported
West Kalimantan		
Pontianak	1	0
Sintang	1	0
Ketapang	23	14
Badau	2	0
Kendawangan	8	8
Batang Lupar	3	2
Central Kalimantan		
Palangkaraya	0	1
Kotawaringan Barat	3	0
Kotawaringan Timur	2	2
East Kalimantan		
Kutai Timur	0	2
Berau	0	1
Malinau	0	1
Total	43	31

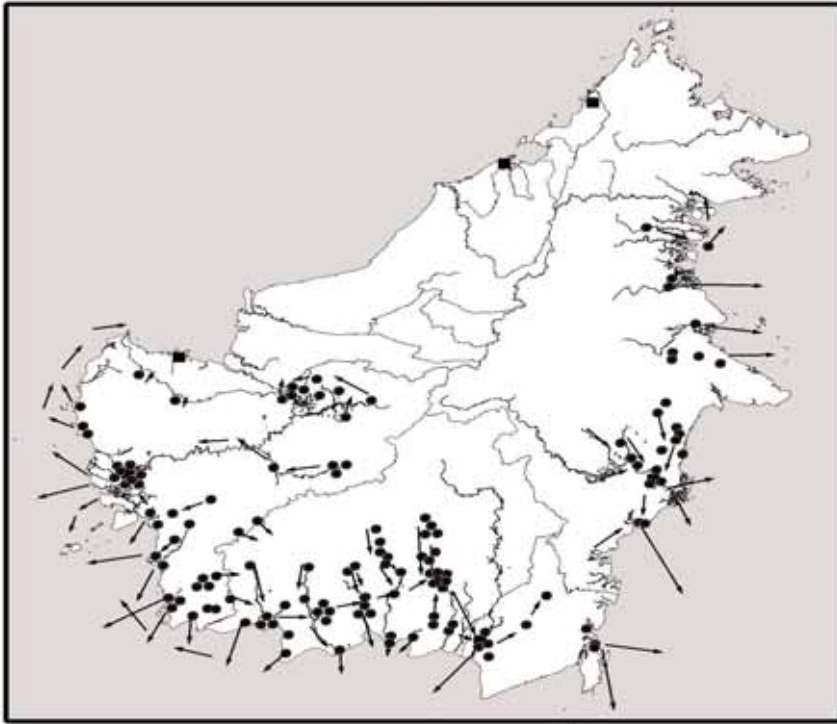
Information on localities of trade in orang-utans or their parts, and on localities where orang-utans were reported to be kept as pets was sufficient to depict the major areas where orang-utans are traded (Fig. 5a). Assuming that this signals where the animals are being caught, it is possible to analyse where the source and sink areas are for wild orang-utan populations. By plotting all the localities that refer to trade in the period 2001-2004 on a map, the data can be compared this with results from a survey conducted by Meijaard in the period 1994-1998 to describe changes over time (Rijksen & Meijaard, 1999) (Fig. 5b). As in the present study, Meijaard collected data by a combination of surveying and opportunistic interview-based research, and although longer in duration, the survey covered roughly the same regions.

The most obvious change between the two maps is that the number of reported cases of orang-utan trade from East Kalimantan has decreased. The number of records is lower and also the number of orang-utans traded appears to be lower in 2001-2004 compared to 1994-1998. The increase of records from South Kalimantan refers partially to individuals that were bought from Central Kalimantan with the intention to be sold in East Kalimantan. Few noticeable differences between 1994-1998 and 2001-2004 are apparent between the provinces of West and Central Kalimantan. Any differences between 1994-1998 and 2001-2004 may be related to differences in the areas that were surveyed, differences in how openly orang-utans are being displayed, and small differences in methodology used. However, based on interviews and data from e.g. the Wanariset rehabilitation centre, the decline in trade in East Kalimantan seems to be real. It is possible that this is largely a result of a significant decline in the expanse of good forest remaining in this province after >5000 km² of forest areas was affected by the fires associated with the 1997-1998 ENSO event (Siegert *et al.* 2001). As such, the decline in trade in orang-utans, if real, seems to be at least partially the result of the decrease in the number of wild orang-utans in the province.

Figure 5 a&b

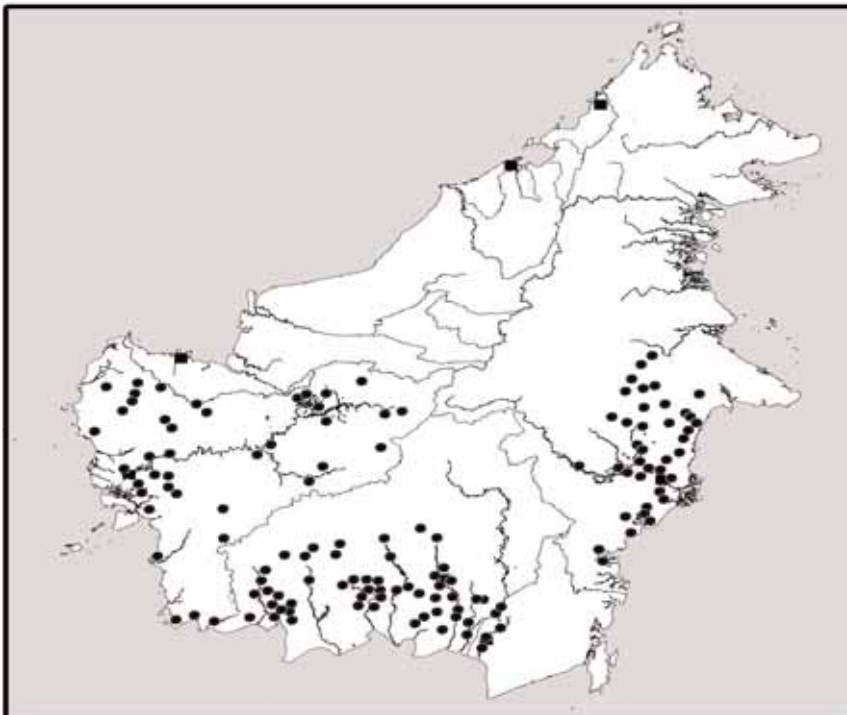
Locations from where information was received on trade in orang-utans or orang-utan parts, and orang-utans in private hands (a) in the 1990's (mostly 1994-1998 with arrows indicating trade routes) and (b) in 2001-2004.

Figure 5(a).



Source: Rijksen & Meijaard (1999); E. Meijaard, pers. comm. to Vincent Nijman, 2004

Figure 5(b).



Source: From this study

Numbers hunted

Data from the age distribution of orang-utans arriving at the different rehabilitation centres indicate that the vast majority of orang-utans in trade are infants or juveniles, suggesting that hunting or killing of (female) orang-utans is widespread. Hunting of orang-utans is widespread throughout the interior of Kalimantan. Certain Dayak and Punan tribes appear to have a preference for orang-utan meat and those also frequently hunt gibbons. These tribes are found scattered over the distribution range of the orang-utan (Rijksen & Meijaard, 1999; E. Meijaard, pers. comm.; A. Erman, pers. comm.). Hunting and capturing of orang-utans for trade is often associated with the (illegal) timber trade, with many of the orang-utans being killed inside logging concessions or forest areas that are being logged. The widespread occurrence of hunting in concessions does not mean that orang-utans in protected areas (national parks, strict nature reserves) are safe from being shot by a hunter. This is because active monitoring and law enforcement is lacking in all but a few protected areas, and hunting levels inside protected areas may be as high as in non-protected forest areas. Numerous reports of orang-utans and gibbons being hunted inside protected areas were received by the TRAFFIC researchers during this survey, including Gunung Palung National Park, Danau Sentarum National Park, Kendawangan Strict Nature Reserve, Betung Kerihun National Park (West Kalimantan), Bukit Baka-Bukit Raya National Park, Tanjung Punting National Park (Central Kalimantan), Kutai National Park and Kayan Mentarang National Park (East Kalimantan).

A combined total of 20 reports of orang-utan and / or gibbon hunting were compiled for the period 2001-2004, but the real number is likely to be significantly higher. Hunting is generally for meat and / or as a means to obtain the young that are then traded as pets. 'Sport hunting' by the "urban elite" was reported occasionally, especially in areas where the large-scale clearing of forest has occurred to make way for oil palm plantations. In some cases, it was reported that when orang-utans are flushed out of small forest remnants, and forced to flee along the ground, hunters wait nearby shoot them. No hard data were obtained on any rewards offered by plantation owners to kill "pest" orang-utans, although this has been noted in the past in East Kalimantan (MacKinnon *et al.* 1994)

Numbers in rehabilitation centres

It has been argued (Leighton & Whitten, 1984) that the greatest accomplishment of orang-utan rehabilitation has been its impact on the illegal trade of orang-utans. Since Indonesian government officials have had places to send captive orang-utans at their disposal, they have tried harder to confiscate them. As the rate of confiscations has increased, trade in orang-utans is believed to have declined (Leighton & Whitten, 1984). However, data received from different rehabilitation centres do not support this assumption.

For the period 1971-2004 a total of 1433 orang-utans were taken in for rehabilitation at four wildlife rescue centres in Kalimantan, or, on average more than 42 orang-utans per year. The data were complete for the Wanariset rehabilitation centre and the Nyarumenteng rehabilitation centre, whereas only scant data were available for the number of orang-utans that have been received by the Orang-utan Foundation Indonesia (OFI).



Credit: Julia Ng/TRAFFIC Southeast Asia

A young confiscated orang-utan placed in a KSDA officer's home while waiting for a place in one of the rehabilitation centres in Kalimantan

According to the Orang-utan Foundation Indonesia at the Tanjung Puting orang-utan rehabilitation centre a total of 237 orang-utans were received for rehabilitation, and this number was confirmed by the BKSDA in Palangkaraya. As the project has been running since 1971 this translates to an average intake of 6.9 orang-utans per year for the last 23 years. Although the data are incomplete, for the period 2002-2004 at least 101 orang-utans were received, which implies that at the end of 2001 no more than 136 orang-utans had been taken in in a 30-year period. This does not correspond, however, with the >180 orang-utans that Yeager (1997) reported for the period 1971-1994, nor with the 162 orang-utans reported by Rijksen & Meijaard (1999) for the period 1971-1996.

Table 4 shows that intakes of orang-utans at the Tanjung Puting orang-utan rehabilitation centre must have differed significantly over the years. During the period 2002-2004, >33 orang-utans were received per year, and in the period 1991-1994 an average of 18 orang-utan per year. The differences between the 1970s to 1990s and the 2000's are striking, with an increase in intake of between 150->600%, depending on the exact period of comparison. This may indicate an increase in the intake of orang-utans, but, as indicated above, the numbers simply do not add up, and the lower intake rate at earlier years may result from under-reporting.

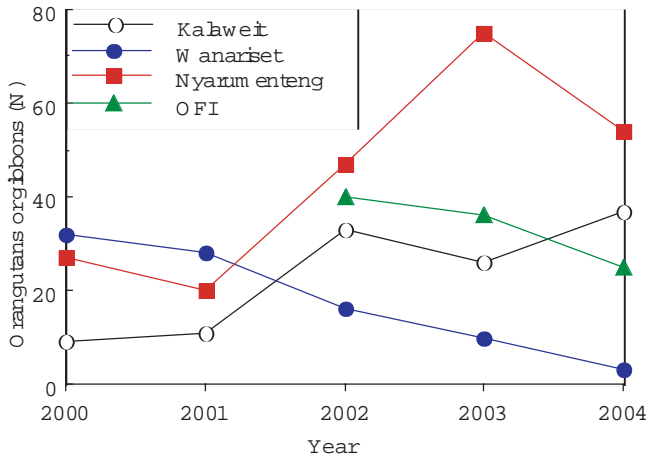
Table 4.
Number of orang-utans received at the Tanjung Puting orang-utan rehabilitation centre over the past 34 years.

Period	Number of orang-utans	Increase per annum	Source
1971-1990	108	5.6	B. Galdikas in Rijksen & Meijaard (1999)
1971-1994	>180	>7.5	Yeager (1997)
1991-1996	54	7.7	PHPA in Rijksen & Meijaard (1999)
2002	40	40	OFI, pers. comm. 2003
2003 (9 mo)	36	48	OFI, pers. comm. 2003
2004 (9 mo)	25	33.3	OFI, pers. comm. 2004
1971-2004	237	6.9	OFI, pers. comm. 2004 BKSDA Palangkaraya, 2004

For the period 2000-2004 the intake of confiscated or donated orang-utans from Kalimantan alone (excluding Bornean orang-utans that arrived from other parts of Indonesia or from abroad) at the three orang-utan reintroduction programmes are approximately 400 animals (see Fig. 6) but since the data from OFI are not available for the first two years, the real number must have been higher. In the past three years, an average of 104 confiscated or donated orang-utans per year were received at the rescue centres.

Figure 6.

Annual intake of confiscated or donated orang-utans (Wanariset, Nyarumenteng, OFI) and gibbons (Kalaweit) at four rehabilitation centres in Kalimantan. Excluded are all orang-utans or gibbons that arrived from outside Kalimantan, that were transferred from other centres, or that were the result of rescue operations (see the Methodology section for details).



Weaning in orang-utans is achieved at an age of approximately four years, whereas the juvenile orang-utan stays in close proximity of its mother for another three to four years. In all likelihood we can therefore assume that for each orang-utan of less than seven years of age its mother must have been killed. Data from the period 1999-2003 from two rehabilitation centres (Nyarumenteng and Wanariset) shows that indeed the majority of orang-utans in trade in Kalimantan are still very young. Excluding individuals that arrive at the rehabilitation centres as a result of 'rescue' operations, and excluding those individuals that arrive from other islands in Indonesia or abroad, almost ten percent of the orang-utans are less than one year old upon arrival at the centre. Ninety-four percent are less than an estimated seven years of age (Table 5). Although it is not known precisely how long all these individuals have been kept by their previous owners it is clear that when these orang-utans were taken from the wild they were younger still. The number of mature orang-utans that arrive at Nyarumenteng and Wanariset is larger than Table 5 indicates as many of the older orang-utans are the result of rescue operations or have arrived from zoos or wildlife rescue centres from Java, Sumatra or abroad.

Table 5

Estimated age of 331 Bornean Orang-utans upon arrival at two rehabilitation centres in Kalimantan from the period 1999-2003. Note that only individuals from Kalimantan are included.

Estimated age	Nyarumenteng	Wanariset	Percentage
< 1 year	25	7	9.7
< 4 years	114	57	51.7
< 7 years	68	40	32.6
< 12 years	13	3	4.8
> 12 years	3	1	1.2

Prices

For orang-utans that were bought by owners living in regions where wild orang-utans were present (source areas) their owners paid a price of IDR 243 000±123 000 (USD 27±14) (mean plus / minus one standard deviation; n=15). When these orang-utans were sold in these regions the price had increased moderately to IDR 372 000±152 000 (USD 41±17) (n=9). In towns within Kalimantan orang-utans were bought by their owners for IDR 1 007 000±769 000 (USD 111±77) (n=7) and sold for IDR 3 060 000±2 189 000 (USD 337±241) (n=5). In Java, prices of Bornean orang-utans are considerably higher than in Kalimantan. Based on an assessment in 2003 (Nijman 2005a) the average price of an orang-utan offered for sale on Java was IDR 3 462 000±409 000 (USD 406±48 at 2003 rates) (n=10). Apart from the buying and selling of orang-utans in source areas, every step in the trade chain from an orang-utan being sold from a village to a town in Kalimantan, to an orang-utan being traded within or between towns in Kalimantan, to orang-utans being sold in Java, indicates a two- to threefold increase in prices (See figure 10).

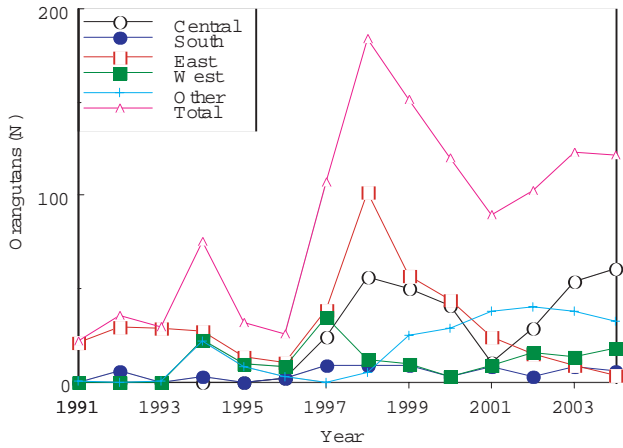
In the northern part of West Kalimantan orang-utans are normally priced in Malaysian Ringgit, whether or not they are traded to Malaysia or traded within Kalimantan. In the course of the survey people were occasionally encountered that said they had bartered their pet orang-utan for other commodities such as a wrist-watch or electronic equipment (cf. Rijksen & Meijaard, 1999). This latter seems to be particularly prevalent in the southernmost tip of West Kalimantan and the western part of Central Kalimantan, where large ships are often moored offshore to renew their supplies. Small motorboats carry not only the necessary supplies to these ships but also protected wildlife, including orang-utans and gibbons. These animals are either sold for cash or bartered for electronic equipment, watches and other goods.

Origin of orang-utans

An analysis of regions from where the various rescue centres received orang-utans reveals large temporal differences over the past decade. In the first years after opening, the majority of orang-utans arriving at the Wanariset reintroduction centre was mainly from the province of East Kalimantan, with a clear peak in 1998 as a result of the large areas of forest that had suffered from the fires associated with the 1997-1998 ENSO event. Later, especially after the Nyarumenteng rehabilitation centre was opened, the number of orang-utans from Central Kalimantan increased. In the past five years, the numbers of orang-utans that have arrived at the various centres from areas outside Kalimantan (both from within Indonesia and abroad) have steadily increased. This is largely a result of the establishment of a number of wildlife rescue centres on Java and other islands in Indonesia, and a steady but small number of orang-utans being repatriated from other countries, including Japan and Taiwan.

Figure 7.

Number of Bornean Orang-utans *Pongo pygmaeus* arriving at wildlife rescue centres in Kalimantan grouped by region. Central, South, East, West, refers to the Kalimantan provinces, other refers to other regions in Indonesia (Java, Sumatra, Bali, Sulawesi) and orang-utans that have arrived from abroad.



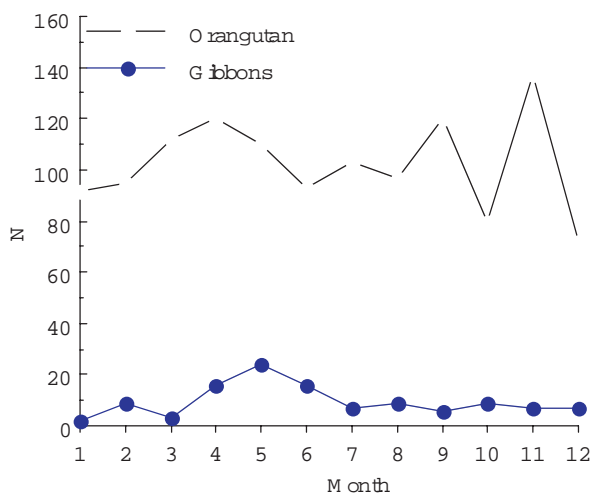
Source: Wanariset I Samboja, Nyarumenteng, OFI Pekalangbun, GPOCP. Note that the data from these latter two covers 2004 only.

Temporal changes

Based on data from the period 1991-2004 (orang-utans) and 1999-2004 (gibbons) the number of animals that are confiscated and / or donated to the rehabilitation / rescue centres shows some variation over the year. For gibbons there is a clear increase in the period April -June, being the beginning of the dry season (Fig. 8). For the remainder of the year there appears to be little temporal variation. For orang-utans the data for the months October and December appear to be low, but the number in the intervening month of November in contrast is very high. It is unclear whether this means that poaching and trade is indeed an all-year round business or that the actions of the rehabilitation centres and the regional offices for the conservation of natural resources are deliberately spread out over the year.

Figure 8.

Number of Bornean Orang-utans *Pongo pygmaeus* (1991-2004) Müller's gibbon *Hylobates muelleri* and Bornean White-bearded Gibbon *H. albibarbis* (both 1999-2004) arriving at wildlife rescue centres in Kalimantan by month.



Source: Wanariset I Samboja, Nyarumenteng, OFI Pekalangbun, GPOCP, Kalaweit

Trade routes

Figure 5a indicated the major trade routes for orang-utans within Kalimantan, as well as from where the animals leave Kalimantan. As previously indicated, in many parts of Kalimantan, rivers are the main mode of transport on the island and many of the villages and towns are situated along rivers, with the larger ones normally situated nearer to the mouths of the rivers. Rivers, or roads situated alongside rivers, are used to transport orang-utans from the interior to the coast.

In West Kalimantan, orang-utans from the area north of the Kapuas River are being transported to either the provincial capital Pontianak, or overland to Sarawak (D. Liswanto, *in litt.*, Jojo, *in litt.*, 2004). Transporting young orang-utans by air-conditioned car is also believed to occur as apparently the animals remain quieter in these cooler conditions. There is only one official border crossing (at Entikong, Indonesia to Tebedu, Sarawak) with the presence of the Immigration Department at the Indonesia and Malaysian side, but in reality there are over a 50 roads that bring people and goods from West Kalimantan to Sarawak and vice versa. Since these are not official border crossings, there are no control posts. With respect to the trade in orang-utans, the Batu Lintang border crossing (north of the Danau Sentarum National Park) and Aruk border crossing north-west of Gunung Niut Nature Reserve are important. Numerous reports indicate that orang-utans are being traded across these borders, often alongside illegal timber (A. Erman and D. Liswanto, pers. comm., 2004, this survey). Another less common route is by sea, from the west coast of West Kalimantan north to Sarawak. This is especially prevalent in the smaller coastal villages on either side of the Indonesian-Malaysian border (D. Liswanto pers. comm., 2004). The northern part of West Kalimantan is economically dependent on Sarawak more than it is on other parts of Indonesia (hence the prices of orang-utans are often quoted in Malaysian Ringgit) and it is not surprising that the illegal trade of wildlife follows this general pattern.

From Pontianak, orang-utans are allegedly being transported not only to Sarawak but also to Singapore, Peninsular Malaysia and, with cargo ships to other parts of Asia. (D. Liswanto, *in litt.*, Jojo, *in litt.*, 2004). The majority is likely to end up being traded within Indonesia, including Java and Sumatra (including the island of Batam near Singapore) (Nijman 2005a).

Orang-utans from the southern part of West Kalimantan are either being transported north to Pontianak, or south to the coastal towns of Ketapang, Kendawangan, and Sukadana over the border into Central Kalimantan. From these coastal harbours, orang-utans can be transported directly to Java, or can be sold or bartered on international ships that lay off-shore. Alternatively, orang-utans can be smuggled overland to Central Kalimantan following roads from Ketapang and Sintang Hulu into Kotawaringin Barat.

Within Central Kalimantan, trade routes of orang-utans follow the flow of the major rivers south to one of the many smaller harbours where the animals can be transported further south to Java or, with passing boats to other parts of South-east Asia. Alternatively, orang-utans are being transported overland to the larger towns, e.g. Pekalan Bun or Palangkaraya, and / or further to Banjarmasin, the capital of South Kalimantan. Central Kalimantan harbours some of the largest wild populations of orang-utans but both legal and illegal logging is changing the landscape at a rapid pace. This is exacerbated by the large-scale forest fires that affect the province on an almost annual basis. The destruction of



The river is the main mode of transportation in Kalimantan

Credit: Julia Ng/TRAFFIC Southeast Asia

orang-utan habitat causes the animals and humans to come into contact with greater frequency than ever before, usually with negative consequences for the orang-utan.

In South Kalimantan there never were populations of wild orang-utans (not even in historic times), but today especially Banjarmasin and to a lesser extent, Kotabaru, are important trading centres. The main road from Banjarmasin through Rantai and Amuntai is used to transport illegal wildlife from Central Kalimantan to East Kalimantan. (D. Liswanto *in litt.* to Vincent Nijman, 2004; Sukirno, pers. comm. 2004; Fazrin Rachmadani pers. comm., 2004). The population of orang-utans that has been reintroduced by the Samboja rehabilitation centre in the Meratus Mountains Protection Forest is a potential new source area for orang-utan traders. The area is embedded in forests that have been handed out as logging concession. The Meratus Mountains Protection Forest is inadequately protected and (illegal) logging is destroying the forest in and surrounding the area where orang-utans have found a new habitat. The re-introduced population comprises mainly juveniles which are possibly too old to be of real interest for the pet-trade. Few, if any, orang-utans have been born in the Meratus mountains but in the coming years, when mother and baby orang-utans are likely to be more numerous in this area an increase in protection will be needed to safeguard this population from poachers.

In East Kalimantan wild populations of orang-utans are only found in the area north of the Mahakam River, and certainly this area was a major source area for orang-utan trade in the 1990s. Especially in the period 1997-1998, large numbers of orang-utans were traded in this province, as a direct consequence of large areas of the orang-utans' habitat being affected by fire. At present, trade in orang-utans is either much reduced or has moved more underground than in the past. Orang-utans are less frequently on open display, and the impression arose that the number of orang-utans being kept as pets has seen a significant reduction. When orang-utans were traded, the animals often originated from areas that were either logged or that were being converted to oil palm plantations. This was for instance the case in the Berau and Kutai Timur regencies (Fazrin Rachmadani, pers. comm.). In the Berau region there are still significant orang-utan populations but wildlife trade in the region is relatively irregular, which likely indicates that few orang-utans were traded from or to this region. Further north still, in the Malinau and Nunukan regencies, there were few indications that orang-utans were regularly traded to Sabah, despite its close proximity.

Many of the orang-utans that are shipped out of Kalimantan are said to be transported to Java, and especially several coastal towns (e.g. Jakarta, Tegal, Semarang). This concurs with the relative large numbers of Bornean Orang-utans arriving on Java (Djuwantoko, 1981; Nijman 2005a).

The gibbons

General structure and numbers in trade



Credit: Julia Ng/TRAFFIC Southeast Asia

A young pet gibbon clinging to a dog, West Kalimantan (Borneo) Indonesia

TRAFFIC obtained data on 157 gibbons that were either kept as pets or that were traded (Table 6). Especially in Central Kalimantan and West Kalimantan, gibbons are present in almost every village or hamlet, as well as in most of the larger towns. Less gibbons were observed in East and South Kalimantan, probably because the animals were less openly displayed. The Kalaweit Program surveyed the Katingan River in Central Kalimantan, and found at least one pet gibbon (*H. albibarbis*) in every hamlet, two or more in every village, and

a dozen or more in the larger towns along this river (Chanee Brulé, pers. comm. to Vincent Nijman, 2004). The total of captive gibbon population along this one river alone numbers easily over 100 individuals. If this is representative for other river systems in Central and West Kalimantan, this suggests that in these two provinces alone, up to a thousand captive gibbons may be present at any time. Numbers in South and East Kalimantan may be lower, but would still easily add another few hundred individuals.

Table 6.
Number of captive gibbons reported or observed in Kalimantan in the period 2003-2004.

Province regency	<i>H. albibarbis</i>	<i>H muelleri</i>	<i>Hylobates spp*</i>
West Kalimantan			
Ketapang	40	4	-
Pontianak	1	14	8
Sambas	-	3	-
Sanggau	-	3	-
Kapuas	-	6	3
Sintang Hulu	1	6	-
Central Kalimantan			
Kotawaringan Barat	4	-	-
Kotawaringan Timur	3	-	-
Palangkaraya	25	-	-
Kapuas	5	-	-
Barito Selatan	-	-	2
Barito Utara	-	-	2
South Kalimantan			
Banjar	-	-	9
East Kalimantan			
Pasir	-	1	-
Kutai Kartenegro	-	1	-
Kutai Timur	-	8	-
Berau	-	2	-
Malinau	-	5	-
Bulungan	-	1	-
Total	79	54	24

**Hylobates* spp almost invariably refer to either *Hylobates albibarbis* or *H. muelleri* as species of gibbon from Sumatra or mainland Malaysia (*H. klossi*, *H. lar*, *H. agilis*, *Symphalangus syndactylus*) or Java (*H. moloch*) were not observed on Kalimantan.

Numbers hunted

It was difficult to assess the numbers of gibbons that were hunted throughout Kalimantan. As with orang-utans, in order to obtain the babies and juveniles, which are the age classes most frequently traded, the mother normally has to be killed. Hunters indicated that it was more difficult to kill a gibbon than an orang-utan as the animals themselves are smaller and are more agile in moving through the canopy. Furthermore, more frequently than orang-utans, mothers and young remained high up in the tree, making it difficult for the hunter to obtain the young. As with orang-utans many gibbons arriving at the rescue centres are young animals. This is also the case with many that have been observed at wildlife markets and zoos within Indonesia (Nijman 2005a) and abroad (Chen *et al.* 2004). For each juvenile observed at a market or in an Asian zoo, it is realistic to assume that its mother has been killed.

In general, the trade dynamics for orang-utans are similar to the dynamics of trade in gibbons. The main difference is that because the distribution range of the gibbons is larger than that of the orang-utans, the hunting of gibbons is even more widespread than that of orang-utans. As with orang-utans, throughout Borneo's interior, the species are hunted by both the different Dayak tribes and the Punan. Comparatively, hunting pressure in coastal areas is likely to be low, but this differed between regions with relative higher perceived hunting pressures in West and Central Kalimantan..

Numbers in rehabilitation centres

From 1999 till mid-2004, the Kalaweit Program had received almost 120 gibbons (see Fig. 6), with equal numbers of males and females and equal numbers of both Bornean species. These include gibbons that were transferred from Samboja in East Kalimantan and the GPOCP in West Kalimantan. About half of the gibbons are received from Central Kalimantan, reflecting the position of the rescue centre in this province (Fig. 9). Of the remainder, about half originated from East Kalimantan, and the other half from West and South Kalimantan and other parts of Indonesia. A relatively low proportion of the animals arrived from West Kalimantan.

Although it is known that gibbons have been received by some other wildlife rescue and reintroduction centres in the past, no data were available on these gibbons.

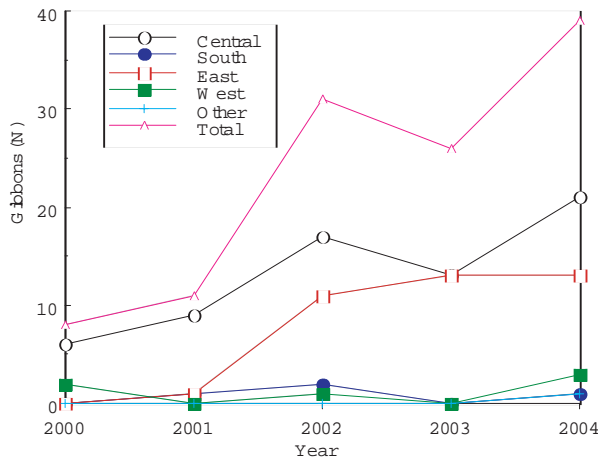


Credit: Julia Ng/TRAFFIC Southeast Asia

A young Müller's Gibbon in the embrace of its owner, West Kalimantan (Borneo) Indonesia

Figure 9.

Number of Müller's Gibbon *Hylobates muelleri* and Bornean White-bearded Gibbon *H. albibarbis* arriving at wildlife rescue centres in Kalimantan grouped by region (Central, South, East, West Kalimantan provinces). Other refers to other regions in Indonesia (Java).



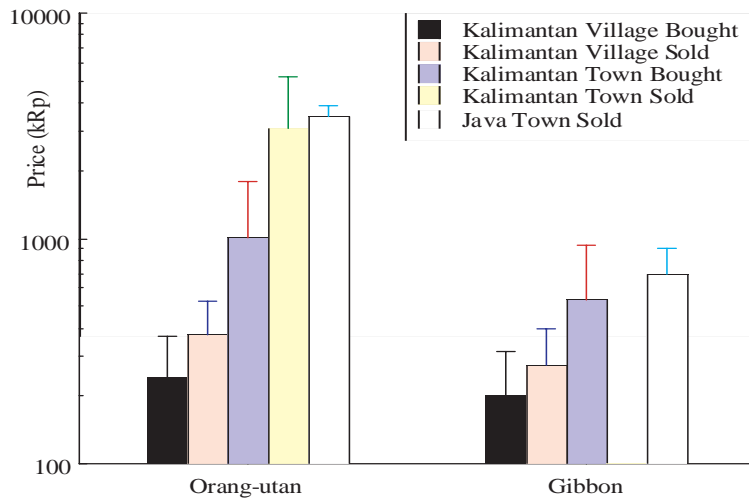
Source: Kalaweit, GPOCP

Prices

There is no difference between the two species of gibbon with respect to prices paid or prices requested. Normally in one region, only one of the two species is traded, although in the area surrounding the Kapuas and Barito Rivers, both species were encountered. For analysis of prices both species were pooled. For gibbons that were bought by owners living in regions where wild gibbons were present (source areas) their owners paid a price of IDR 201 000±115 000 (USD 22±13) (n=14) (Figure 10). When these animals were sold in these regions, the price had increased moderately to IDR 275 000±121 000 (USD 30±13) (n=6). In towns within Kalimantan, gibbons were bought by their owners for IDR 535 000±402 000 (USD 59±44) (n=10). In Java, prices of both species of Bornean gibbons are considerably higher than in Kalimantan. Based on an assessment in 2003 (Nijman 2005a), the average price of a gibbon offered for sale on Java was IDR 691 000±213 000 (USD 76±23 at 2003 rates) (n=7). Hence, on average, prices of gibbons in source areas are similar to those offered for orang-utans, but in comparison with orang-utans, prices do not increase dramatically as the animal moves further along the trade chain from source to end-buyer. In fact, prices for gibbons do not differ much between towns in Kalimantan and towns in Java.

Figure 10.

Exponential increase in prices asked and offered for Bornean Orang-utans (n = 46) and Bornean Gibbons (n = 37) as they move through the trade chain. Note that the prices on the y-axis are expressed on a logarithmic scale.



Temporal changes

The number of gibbons that are confiscated and / or donated to the rehabilitation / rescue centres in the period April - June is higher than the other parts of the year (see Fig. 8). The reason for this is unclear.

Trade routes

Trade routes of gibbons generally follow those of the orang-utans, and these are depicted in Figure 5a. The only difference might be that since the distribution range of gibbons is larger than that of orang-utans (i.e. gibbons do occur in South Kalimantan and East Kalimantan south of the Mahakam River) the trade network is slightly more extensive.

Orang-utans and gibbons held in zoological gardens

Credit: Vincent Nijman



Müller's Gibbon in Kebun Raya Samarinda, East Kalimantan (Borneo) Indonesia

There are few zoological gardens in Kalimantan. The few that are present generally maintain their primates in appalling conditions. Numbers of gibbons and orang-utans at the four zoos included in the survey are low (Table 7). Three of the zoos have received at least part of their stock directly from the BKSDA, including animals that were confiscated at their owners and have now been placed in these zoos. The Kebun Binatang Gunung Bayan in Kutai Barat displays various animals occurring in Kalimantan (besides orang-utans and gibbons also Proboscis Monkeys *Nasalis larvatus*). It is not clear how they have obtained their stock but the animals are not registered at the provincial BKSDA office.

Table 7.

Number of Bornean White-bearded gibbon *Hylobates albibarbis* and Müller's Gibbon *H. muelleri* and Bornean Orang-utan *Pongo pygmaeus* in four zoos in Kalimantan in 2004.

Zoo	<i>H. albibarbis</i>	<i>H. muelleri</i>	<i>P. pygmaeus</i>
Kebun Binatang Pontianak	1	1	6
Taman Ria Wisata Agro	4	-	1
Kebun Binatang Gunung Bayan	-	1	4
Kebun Raya Samarinda	-	4	6

Primate hunting, wild meat, and medicinal uses



Credit: Julia Ng/TRAFFIC Southeast Asia

A cap made out of gibbon fur

Throughout the tropics many species of wildlife, including primates, are hunted and subsequently eaten or used as traditional medicines. In parts of Southeast Asia primate hunting nowadays is almost as large a threat to the survival of primates than habitat loss (R. Boonratana, *in litt.* to Vincent Nijman, 2005; Geissmann *et al.* 2000). Although the motives of hunting primates in order to obtain their meat, to obtain body parts that can be used in traditional medicine, or to obtain the young to be sold off as pets may differ, and different species of primate are targeted for different reasons, it was difficult to separate these motives while doing this survey. Many hunters in Kalimantan are opportunistic and when primates are encountered an adult female may be shot, its meat eaten, certain body parts kept for medicinal use, and any young taken to be sold as pets.

As indicated above, in order to obtain infant orang-utans or gibbons, the mother needs to be killed. Various reports were received regarding hunters having eaten (parts of) the killed adult, but the general contention was that the main incentive to kill the adult was in order to obtain the young. This, however, may have been peculiar to this survey as the main objective was to document trade. Rijksen & Meijaard (1999) give an elaborate account of the history of hunting and poaching of orang-utans which describes that hunting is widespread and that certain tribes have a clear preference for primate (including orang-utan and gibbon) meat. Indeed, in parts of Central Kalimantan, orang-utan meat was preferred above all other types of wildlife.

Smits (2002) reported that *abon* (dried meat) made of orang-utans was exported from Central Kalimantan to China, but in the present assessment little if any data on the trade of meat was received. Rijksen & Meijaard (1999) noted that poaching of orang-utans is still common, and that orang-utans are still slaughtered for food, including by hunters from the “urban elite”. At least in the 1990s the meat of poached orang-utans had been offered openly for sale in East Kalimantan, and there are persistent rumours that in specialised restaurants the brains, liver and meat of orang-utans and gibbons are available (Rijksen & Meijaard, 1999). Given the general absence of law enforcement there seems to be no deterrent to selling or trading orang-utan or gibbon meat, and hence, it may still be ongoing.

There have been claims that the meat or body fat of orang-utans is used as an aphrodisiac or for *obat kuat* (potency-heightening) (Rijksen & Meijaard, 1999; Smits, 2002). In Indonesia gibbons and siamangs are sometimes used in traditional medicine: the skinned animal is fried and made into a paste, which is then applied to cure skin ailments. During a survey in August 2005, orang-utan fat contained in a plastic mineral water bottle and a small piece of its skin was hung from a front door of a villager house in Kaburai, Central Kalimantan. Both orang-utan skin and fat is believed to be able to protect the house from fire.



Orang-utan fat and skin believed to protect a house from fire, Central Kalimantan (Borneo) Indonesia

Impact of trade on wild populations

In the period 2003-2004 TRAFFIC recorded some 70 orang-utans in private hands in Kalimantan, many of which were still very young and, hence, were recently derived from the wild. The real number of orang-utans in private hands is larger than this number but at present it is not possible to say exactly how much larger. During the research, TRAFFIC received information from numerous areas that at least dozens of orang-utans were hunted to obtain the young, and trade in orang-utans in Kalimantan was regularly reported. During the past three years rescue centres in Kalimantan received at least 313 orang-utans that originated from Kalimantan. The vast majority of these were still very young, and, hence, were recently taken from the wild. These data from Kalimantan suggest that, conservatively, the number of orang-utans entering trade in Kalimantan may be in the low hundreds annually.

A survey in Java and Bali in 2003 (Nijman 2005a) recorded 5 Bornean Orang-utans at wildlife markets (20 cities surveyed), 29 Bornean Orang-utans in four wildlife rescue centres, and 107 Bornean Orang-utans in eleven zoos. Combined these data suggested that the number of Bornean Orang-utans traded on these islands might be in the low hundreds annually. It is likely that all of these individuals, or at least a very large proportion of them, originated from Kalimantan and not from the Malaysian States of Sabah and Sarawak.

Even though all data are not independent (an orang-utan recorded as pet in a village in Kalimantan may later be recorded on a Javan wildlife market), the combination of these data sets suggest that at the number of Bornean Orang-utans originating from Kalimantan that are traded may be in the order of 200 up to 500 individuals annually. These individuals are by definition the survivors, and the real number of orang-utans that are lost from the wild is likely to be significantly higher.

Van Schaik *et al.* (2004) estimated that the total wild population of orang-utans on Kalimantan is less than 40 000. This suggest that the number of reproductive females number <20 000 but probably <15 000. Even under the best conditions these cannot produce more than 3 000-4 000 young a year. If the above estimates are correct, the loss of more than a hundred young orang-utans from the wild means that recruitment is seriously hampered. More importantly, since the observation of a young orang-utan in trade represents the added loss of at least one reproductive female (i.e. its mother) some 3-4% of the total number of reproductive female orang-utans is also lost from the wild population annually. These lowered levels of recruitment and the added losses of reproductive females are enough to bring the population in a negative spiral that will ultimately lead to its extinction.

A similar way of reasoning suggests that the number of Müller's and Bornean White-bearded Gibbons in trade must be in the low hundreds the least, but more likely will affect thousands of gibbons annually. Estimates of the number of

gibbons in Kalimantan are outdated, but on the basis of the amount of available habitat and the densities at which the species occur may be >100 000 for each species (see also MacKinnon 1987; Nijman 2005a). As such trade in itself does not affect a significant proportion of the wild population. However, many of the gibbons observed in trade in Kalimantan are derived from forest areas that were in the process of being logged, or being converted to cash-crop plantations, or that were being degraded by other processes, and this destruction of habitat does have a negative impact on the two species of gibbon in Kalimantan.

Wildlife protection policy

National wildlife protection policy

Orang-utans and gibbons have been legally protected in Indonesia since the beginning of the 20th century, and, over recent decades, especially with respect to orang-utans, high ranking officials, including ministers and presidents have expressed the importance and need for an increase of protection. Despite this, good forest areas with significant populations of orang-utans (and gibbons) continue to be converted to other land-uses, including oil palm plantations, under permits endorsed by either the national government or, increasingly, by regional governments. Given that large areas of 'wasteland' are found in Kalimantan, if the Indonesian government is serious about its pledges to preserve biodiversity there should be no reason to convert prime orang-utan and prime gibbon habitat to any form of plantation (*Hutan Tanaman Industri* or *Perkebunan*). In 2001, the Central Government through the Ministry of Forestry has launched a policy to stop conversion of natural forests (Samedi, *in litt.* 2005), but implementation at the local level is clearly in need of improvement.

There is no policy on what to do with the often large number of animals in the forest that is to be converted. By law, the animals cannot be harmed, but in the absence of integrated planning this will simply mean that in the forest the animals will be killed either by loggers, by outside hunters or by starvation. When the animals are displaced out of the forest, at best they are being 'rescued' and taken to one of the rehabilitation centres, but in many instances they will end up being killed. Likewise, once the oil palm plantations have been established, and there are still orang-utans present in the surrounding forest, the orang-utans will frequently enter these plantations, bringing them in close contact with humans. In these plantations orang-utans are perceived as pests, with the adults being killed and the young taken as to make an easy profit. These factors create easy opportunities for people to obtain a gibbon or (baby) orang-utan, and as these animals represent money, will end up in trade. As such, there is a steady supply of orang-utans and gibbons to enter the trade chain and the 'problem' of the trade in orang-utans and gibbons thus needs to be addressed at a multiple levels rather than simply the points of trade.

In summary, there are government agencies busy trying to curb the illegal trade in wildlife, often helped by NGOs, and there are several programmes to reintroduce confiscated animals into forest areas without resident populations. However, on the other hand, the same or other government agencies indirectly make sure that there will be a steady supply of new wildlife as permits are handed out allowing habitat destruction which affects some of the largest remaining orang-utan populations.

Initiative for confiscation

From the analysis above, there are regional differences in the practice of confiscations and law enforcement. Regional differences in the number of orang-utans and gibbons that have been confiscated over the years, and temporal variations

(Fig. 7, Fig. 9), suggest that some BKSDA offices are more active than others in confiscating protected animals. Many of the offices target almost exclusively private owners and few confiscations have been made at wildlife markets in the region (although, admittedly, the numbers of these are relatively low in Kalimantan compared to for instance Java).

Many actors could be credited with taking the initiative to make confiscations, such as the police, the BKSDA, rescue centres or local NGO's. The general view of BKSDA officers was that confiscations normally resulted from close co-operation between the BKSDA, NGOs and / or wildlife rescue centres; or by the BKSDA themselves. Representatives of the rescue centres and members of NGOs had a different view, indicating rather that the initiative for confiscating animals did not come from the BKSDA but from the wildlife rescue centres and NGOs. Depending on the level of co-operation between the two groups, which in some instances appeared to be fair and in others almost absent, to convince the BKSDA to take action could either be a rather straightforward task or a long and frustrating haul. Although formally a task of the BKSDA, it was common procedure for the wildlife rescue centres to provide the funding and logistical support for the confiscations. Normally the wildlife rescue centre provided either a (pick-up) truck and staff to handle the animals (including a vet) and food for all those involved, and reimbursed any BKSDA costs for e.g. petrol. Furthermore, all BKSDA staff members that were involved in the operation received some monetary support (c. IDR 120 0000 – 130 000 [USD 12-13] per day, the equivalent of 1 - 3 normal day's work). Given the limited amounts of money allocated by the BKSDA for confiscations, or because of a genuine lack of funding for confiscations, the logistics provided by NGOs or rescue centres was generally appreciated.

Policy of the Department of Forestry

Indonesian law (*Act No 5, 1990*) prohibits private persons to keep catch, care for, transport, and trade in a protected live animal, or to transfer a protected animal from one place to another, within or outside Indonesia. Violating this law can lead to a fine of up to IDR 100 000 000 (USD 10 427 at 2005 rate) and imprisonment for up to 5 years. Subsequently, all gibbons or orang-utans in the possession of private individuals or institutions without the necessary permits should be confiscated by the authorities. Whether these animals are held as pets or as a trade commodity, or any other purpose, is irrelevant. Both the regional offices for the conservation of natural resources (BKSDA) and the police have the authority to confiscate protected animals. Even in times prior to the greater regional autonomy, the regional offices had the authority to confiscate protected animals. Once a confiscation has been executed, the regional BKSDA office can choose to bring the case to the prosecutor's office, which then can decide whether or not to prosecute. Finally it is the judge that hands out the sentence.

Contrary to the spirit of *Act No. 5*, the Ministry of Forestry has issued guidelines to the BKSDA that in effect exempt from prosecution those owners that freely hand over protected animals to the BKSDA (*Instruksi Direktur Jendral Perlindungan Hutan dan Konservasi Alam, No. 762/DJ-IV/ins/121/2001 – Penertiban dan penegakan hukum terhadap penguasaan dan atua perdagangan orangutan dan satwa liar yang dilindungi undang-undang beserta habitatnya*). This exemption is also valid for those owners that hand over their protected animal the moment the BKSDA officers have entered the premises with the intention to confiscate. Animals that have been handed over are then registered as "donations".

Only when an owner refuses to co-operate does he or she face the chance of being legally prosecuted. Guideline No. 762 does not only apply to private owners that are in the possession of 'just' one pet-gibbon or one pet-orang-utan, but also to those that have more abundant wildlife collections. Even after 'donating' protected pets to the authorities, individuals who are later found to be in the possession of yet another protected pet can continue to avoid prosecution by simply handing over any additional animals. Likewise, those private owners that hand over their protected animal to a wildlife rescue centre or zoo can avoid the threat of being prosecuted.

Many of the gibbons and orang-utans that have entered wildlife rescue centres are the result of the aforementioned 'confiscations', but in most cases there is no intention of having the owners prosecuted. Likewise many of the animals that are registered as having been received as donations have in fact been handed over to the BKSDA upon arrival at their private premises. Even though the distinction between 'confiscations' and 'donations' is not clear, from a practical point of view, it really does not matter as only very few people are actually prosecuted for keeping protected wildlife.

As mentioned above, each of the provincial BKSDA offices as well as the individual BKSDA officers have the authority to confiscate animals. They also can decide whether or not to bring a case to the prosecutor's office. The number of confiscations of gibbons and orang-utans made on an annual basis differs greatly between the four provinces. The rate of confiscations for the illegal possession of, or trade in orang-utans or gibbons per year is lowest for East Kalimantan (1.5), followed by South Kalimantan (6.3) and West Kalimantan (9.3). Based on data from 2004, the rate of confiscation of gibbons and orang-utans in Central Kalimantan is an order of magnitude higher than in the other provinces, and this is apparent for orang-utans as well as gibbons. In 2004 alone, Central Kalimantan has confiscated more gibbons than the other three provinces combined, whereas the number of confiscated orang-utans is also relatively high (Table 8). The low number of confiscations made in East Kalimantan may indicate a levelling off on the number of gibbons or orang-utans openly displayed for sale, or indeed a real decline in the number of these animals traded, as records from the Wanariset rehabilitation centre show that in the past a much greater number of orang-utans were confiscated. Alternatively this may indicate a drop in law enforcement effort and/or efficiency in this province

In East Kalimantan the BKSDA at present is considering the option of providing owners of legally protected wildlife (most notably high profile species such as orang-utans, gibbons and sun bears) a registration letter (*Surat Titipan*), allowing the owner to keep protected wildlife. According to the BKSDA, wildlife rescue centres can no longer cope with the large amount of animals and, hence, alternative solutions have to be found. This may be a solution for how to audit the large number of protected wildlife in private hands, and may also reduce the pressure on the wildlife rehabilitation centres somewhat. Provided that certain standards are maintained, this approach may not be against the best interests of the individual animal. However, the issuance of *Surat Titipan* letters would also make it much more difficult to prosecute violators of wildlife protection laws. In effect this would legalise the keeping of protected wildlife, and would provide a loophole for malevolent animal collectors to gain access to protected species. Furthermore, it would contradict with the current wildlife protection laws.

Despite the differences in confiscation activity and registration policy, there is a high degree of similarity between the provinces when it comes to bringing the offender to court. Offenders have not been brought to justice in any of the four Kalimantan provinces, and thus no offenders have been convicted to pay a fine or to spend time in jail. All the officers spoken to at the four provincial offices of the BKSDA confirmed this as fact. With respect to gibbons and orang-utans, none was aware of any offenders being prosecuted, and some of the staff tenure at the BKSDA was considerably longer than the time-period covered by the records handed over.

Table 8.

Number of gibbons and orang-utans confiscated by the BKSDA as reported by the BKSDA

Province	East	Central	West	South	
Period	2000-2002	2004	1994-2004	2002-2004	
Orang-utans confiscated		4	38	136	16
Gibbons confiscated		2	23	4	3
Cases brought to the prosecutor's office		0	0	0	0
Cases currently under investigation		0	0	0	0
Trials		0	0	0	0
Convictions		0	0	0	0

Source: BKSDA, Pontianak, Palangkaraya, Samarinda, Banjarbaru, *in litt.*

There are several factors that would suggest that the BKSDA would recognise the trade in these species to be a serious problem: a) the large number of orang-utans and gibbons that have been received by the various rescue centres; b) the large amount of attention that trade in orang-utans and to a lesser extent gibbons, has received in the media; and c) the extent of observable trade in orang-utans and gibbons on Kalimantan. Several discussions at different BKSDA offices, however, suggested the opposite:

When asked about the prevalence of trade in orang-utans and gibbons, there was a general consensus in all provinces in that, with some notable exceptions, there was little or no trade of orang-utans in Kalimantan, and that the trade in gibbons was small-scale. The rationale behind this was: (1) keeping gibbons or orang-utans as pets does *not* constitute trade; (2) buying and selling of single gibbons or orang-utan does *not* constitute trade; and (3) only if the selling and buying involves large quantities of animals, is done by (full-time employed) professionals, and is continuously in operation it is considered trade. By these definitions, there is therefore no trade in gibbons and orang-utans in Kalimantan. Trade in orang-utans and gibbons, as defined by the BKSDA in Kalimantan, only occurs in Java at some of the larger “bird markets”.

To illustrate this, the Head of the BKSDA in Central Kalimantan, declared that within the whole of Central Kalimantan there might be 2 to 3 orang-utans that are still being illicitly kept as pets, but certainly not more. According to him, trade in orang-utans is much reduced over the past few years, and if there is still any trade then this would be restricted to the small villages in the upper reaches of the rivers. He stated that in towns in Central Kalimantan there is no trade. Over the past seven years the various reintroduction centres have received >100 orang-utans annually from the province of Central Kalimantan alone (Fig. 7) and all of these have been registered by the BKSDA.

Without the BKSDA recognising trade in orang-utans and gibbons, curbing the trade in these species is clearly a problem. Invariably, the BKSDA are of the opinion that when people have an orang-utan or gibbon in their possession, the owner has no knowledge of the protected status of these animals. Therefore, the logic goes that if the owner is not aware that they have broken the law it would be unfair to prosecute them. In those instances where the owner should be aware of the protected status (e.g. when he is the provincial governor, a high-ranking government official, or a member of the armed forces) a request is can be made to hand over the animals to one of the rescue or reintroduction centres. Such requests often occur without the necessary political backing to provide any incentive for compliance. As a result of this societal structure, gibbons and orang-utans have been, and continue to be, kept as pets by all levels of society, and trade in these species can continue.

The BKSDA also stated that the most frequent reason why there are still so many orang-utans arriving at rescue centres, and why so many gibbons are still being kept as pets, is because the general public is not aware of the fact that these species are indeed protected by law, and that it is illegal to keep them as pets or to trade in them. The best way to reduce the amount of orang-utans and gibbons in private hands is to publicise more widely the fact that it is not allowed to keep protected species such as gibbons and orang-utans as pets. The next step would be to take the pet gibbons and orang-utans in as donations, and only if the owners cannot be persuaded to hand their pets in as donations, the BKSDA should confiscate the animals.

When owners of protected species are linked to other criminal businesses such as prostitution or extortion the BKSDA believe they cannot demand pet gibbons or orang-utans to be handed over because this will likely lead to disputes. In cases where army officers or police officers keep protected wildlife as pets, the BKSDA cannot confiscate these animals because they do not have sufficient backing to operate against these powerful people (Yohanes Sutarto, pers. comm.). In order to tackle this, the BKSDA suggest that increased co-operation with harbour personnel (including Customs), other branches of the forestry department, the police, the army, and sometimes even private organisations such as logging concessionaires is needed. But above all, there is a need for the BKSDA to take the problem seriously, and the fact that trade in gibbons and orang-utans is widespread and seriously affects the survival of these species needs to be recognised.

CONCLUSIONS

Killing of, and trade in Bornean Orang-utans and Müller's and Bornean White-bearded Gibbons in Kalimantan is systematic, common and occurs throughout all the distribution range of these species. All three species are frequently traded within Kalimantan and within Indonesia.

Especially for orang-utans, babies and juveniles are by far the most traded age-groups, and for each gibbon or orang-utan observed in trade at least one other individual, i.e. its mother, has died. Extrapolations from available data suggest that some 200 - 500 orang-utans may end up in trade annually from Kalimantan alone, and an equal or higher number of each of the two Bornean gibbon species may be traded annually. Insufficient information is available on the impact trade is having on wild populations of gibbons in Kalimantan, but for orang-utans this number exceeds what can be supported by the wild population.

Trade in gibbons and orang-utans in Kalimantan is in part associated with the (illegal) timber industry, and land clearing for industrial cash-crops, such as palm-oil, but also occurs in areas where the forests are not subjected to these forces. Large forest areas being affected by fire are another reason why access to formerly remote areas by humans is increased, bringing them into closer contact with gibbons and orang-utans ; in most cases this leads to an increase in trade.

Frequent reports of orang-utans and gibbons being killed inside protected areas, including strict nature reserves and national park, suggest that populations inside these areas are not exempted from the threats posed by poachers. Active protection of these forests (i.e. patrolling by motivated staff on a regular basis covering significant portions of the protected area) appears to be low in effort and efficiency, and does not appear to be perceived as a priority at local or national level.

Despite some efforts by national, regional and local, and national and international NGOs, and despite substantial sums of money being allocated to conservation of forests and wildlife in Kalimantan there are no indications that the trade in protected wildlife is decreasing. Although there are regional differences, trade in gibbons and orang-utans is probably

as widespread as it has been at anytime. This may not be unique to orang-utans and gibbons, but is indicative for the scale of the problems wildlife conservation faces in Indonesia and the need for a further increase in effort.

Lack of co-operation between government planning agencies and the Ministry of Forestry with respect to wildlife conservation needs to be addressed holistically in Indonesia. Large forest areas in Kalimantan, with significant large populations of orang-utans and gibbons, are continuously being converted to cash-crop plantations, which do not provide any habitat for orang-utans or gibbons to live. When logging and forest conversion reduce available habitat for orang-utans and gibbons, the absence of law enforcement allows some of these animals to be hunted and others to end up in trade. As such, in part, trade is a natural by-product of bad land-planning practices and lack of law enforcement effort and efficiency.

Law enforcement in Kalimantan with respect to orang-utans and gibbons is failing at different levels. Protected areas do not provide sufficient “on-ground” protection, and outside the protected area system poaching of legally protected species is frequent in non-gazetted areas. Even though it is illegal to keep orang-utans or gibbons as pets, this is commonplace throughout Kalimantan. At best the authorities will confiscate protected wildlife and bring them to one of several wildlife rescue centres. Prosecution of persons that violate wildlife conservation laws is completely absent, and even though over the past few years hundreds of orang-utans and gibbons have been confiscated not a single person has been prosecuted and not a single sentence has been handed out.

The conservation authorities in Kalimantan do not consider trade in orang-utans and gibbons a problem, either because “trade”, by their definition, is considered not to occur, or because the offence is not considered to be serious enough to warrant punishment. As such, there is a large discrepancy between that what national conservation laws aim to achieve and the policy of the executing agencies.

RECOMMENDATIONS

One of the main aims of the assessments in trade in orang-utans and gibbons in Indonesia is not just to document the trade and to analyse gaps in agency responsibility and policy implementation for these protected species, but to arrive at a number of practical recommendations that will decrease the threat that trade poses on the species’ survival. In part these recommendations follow directly from what was observed, but others were presented to us by the different parties involved in monitoring trade, including the BKSDA. The recommendations fall into four categories, i) those related to poor integrated planning; ii) those related to an increase efficiency and transparency of the implementation of wildlife protection law; iii) those related to improving understanding the root causes of trade and of the actors in the illegal wildlife trade; and iv) issues related to increasing awareness and education with respect to the protection of wildlife and the role of non-government agencies and civil society. In addition, some recommendations are made concerning the taxonomic status of orang-utans (and to a lesser degree gibbons) in the nomenclature of CITES.

To increase integration of land-use planning with wildlife protection

Trade largely occurs as a direct consequence of habitat reduction due to logging, land conversion, encroachment, and forest fires (including arson). Addressing trade in isolation from this process is futile. Increasing the protection of gibbons and orang-utans in Kalimantan by reducing trade can only be achieved when this occurs concurrently with an increase in the protection of the remaining forest.

1. There should be a drastic increase in active protection of forest areas. Gazettement must be actively enforced by the respective authorities and executing bodies of the Indonesian Government in conjunction with the land concession holders. Active patrolling of protected areas should be made a top priority.

2. Time and time again high-ranking officials, including ministers and presidents have expressed the importance and need for an increase of protection of wildlife, and especially orang-utans. Despite this, good forest areas with significant populations of orang-utans continue to be converted to other land-uses, including oil palm plantations, under permits endorsed by either the national government or, increasingly, by regional governments. Given that large areas of 'wasteland' are found in Kalimantan, there is no reason to convert prime orang-utan and prime gibbon habitat to any form of plantation (*Hutan Tanaman Industri* or *Perkebunan*). As such, TRAFFIC recommends the Indonesian government to follow up on its pledges to preserve biodiversity, and subsequently introduce a moratorium on the conversion of primary forest to any other land-uses. Plantations of any kind should only be allowed to be established in non-forested areas.

3. If forest is to be converted a policy need to be developed what to do with the (often large numbers of) protected animals in these forests. By law, the animals cannot be harmed, but in the absence of integrated planning this will simply mean that in the forest the animals will be killed either by loggers, by outside hunters, or by starvation. Likewise, once oil palm plantations have been established, and there are still orang-utans present in the surrounding forest, the orang-utans will frequently enter these plantations, bringing them in close contact with humans. In these plantations orang-utans are perceived as pests, with the adults being killed and the young taken as to make an easy profit. We urge the Indonesian authorities to envisage a complete strategy on how to integrate plantation development and wildlife protection, bearing in mind that wildlife by and large cannot survive in plantations.

To increase efficiency and transparency of the implementation of wildlife protection laws

4. Wildlife protection laws, protecting both species and their habitats, need to be enforced more effectively. This cannot be achieved without recognising that protection of wildlife is intrinsically important. This recognition largely needs to come from the general public, but the various government agencies, including the police, the forestry department and the courts need to recognise that the laws provide a reference point for their inter-agency responsibilities. As indicated above it is the responsibility of the national head offices up to the ministerial level to direct their subordinates to enforce wildlife protection laws as intended.

5. The present contention, even by those that have the authority to uphold the wildlife protection laws, that trade in gibbons and orang-utans is non-existent, despite the overwhelming evidence to the contrary, is untenable. Provided that this is not the view of the national government bodies (police, forestry department, customs, etc.) the provincial branches should be directed that the current laissez-faire attitude will no longer be tolerated, and that subsequent actions will be taken.

6. Throughout Kalimantan, by their own admission, the BKSDA is not co-operating sufficiently with other regional government bodies to tackle illegal wildlife trade and to uphold wildlife protection laws. This included insufficient co-operation with the authorities at harbours (including customs), the different branches of the forestry department, local government agencies, and the police, but also non-government agencies as well as logging concessions. We urge each of the provincial branches of the BKSDA to take the initiative for a greater and more efficient co-operation (in practise and not just on paper) and to initiate collaborative actions. Agencies need to meet more regularly as to discuss actions to be taken, and this is best achieved through communication focal points.

7. Active monitoring of wildlife trade by the BKSDA, or any other government body that is responsible for upholding wildlife protection laws, is not routinely and systematically done. More stringent monitoring of the major ports and known localities where wildlife or wildlife products are traded (pet shops, souvenir shops, animal markets, etc.) by the BKSDA is recommended.

8. Orang-utans and gibbons have been legally protected for over 70 years now, and over the years, enough attention has been given to communicating this message, and lack of knowledge on whether or not these species are indeed protected cannot be an excuse for the persistent trade in species such as gibbons or orang-utans. The practise of voluntarily handing over pet gibbons and/or pet orang-utans the moment forestry officials are about to confiscate the animals, to avoid prosecution, should be abandoned as soon as possible, as it does not deter the public from buying and keeping gibbons and orang-utans. The Ministry of Forestry should retract Instruction 762/DJ-IV/ins/121/2001 and instead communicate to their subordinate branches to implement Act No 5 of 1990.

9. In the interest of legally protected species, for the sake of transparency (and hence to preclude collusion), and to allow for the prosecuting of violators of wildlife laws, registration letters (Surat Titipan) allowing owners of legally protect animals to retain their animals should no longer be handed out. The Ministry of Forestry needs to evaluate the legality of these registration letters (handed out by the provincial BKSDA offices), and if these indeed violate national wildlife protection laws, subsequent actions need to be taken. Alternative methods and localities for housing confiscated or donated wildlife needs to be examined concurrently, as does the welfare of the individual pet animals.

To examine the root causes of trade, and target the major actors in the trade

10. Wildlife trade in Indonesia is always in flux, with an ever-changing demand for species and frequent switches from one species to another. Despite these shifts in trade dynamics, orang-utans and gibbons remain among the more frequently traded protected animals. This is partially demand-driven but at least for some species, also supply-driven. It would be worthwhile to further assess in detail the relationship between (illegal) logging and (illegal) collection of non-timber forest products, with the poaching and trade of orang-utans and gibbons. Central to this is solving the questions that relate to which persons, institutions, and agencies are the driving forces behind logging and trade, and this should not exclude local and national government agencies, the army and the police. There has been very little research conducted on the economics of the primate trade in Indonesia, and fundamental questions need to be answered:

With reference to the supplier's end of the chain: who catches which species, where, and why?

What are the forces behind the primate trade and who receives support and backing from whom?

Is the catching of primates merely a by-product of other activities (logging, hunting) or is it an independently operating business?

These questions, among others, need to be addressed both for the major 'source' islands of Sumatra and Kalimantan (or other islands in Indonesia for other species) but also for other regions.

Awareness and education and the role of non-government agencies

11. At present the initiatives relating to 'confiscation' are largely NGO-driven, and the actual costs of these confiscations are paid by the NGOs (BKSDA in Central Kalimantan do not even allocate money for the confiscation of gibbons and orang-utans as they know that the NGOs will pay anyway), and the BKSDA only assists in these actions. In spirit with

Ministerial Regulation 447/Kpts-II/2003 (*Tata Usaha Pengambilan atau Penangkapan dan Peredaran Tumbuhan dan Satwa Liar*), local NGOs involved in wildlife monitoring, and rescue and rehabilitation of gibbons and orang-utans, need to recognise that their work cannot lead to adequate actions unless there is a proper working relationship with the BKSDA, and both parties need to make a greater effort to increase co-operation. Law enforcement and moving a case to prosecution and sentencing is clearly the task of the BKSDA (in which this report shows the agency is not succeeding) and rehabilitation is the functional expertise of the centres. An examination of incentives and the sustainability of effort is needed to encourage a more active role for the BKSDA .

12. Significant reductions in the incidence of hunting and capture of orang-utans and gibbons from the wild populations in Kalimantan, but also the other islands within Indonesia (Sumatra, Java, Bali, etc.) will be assisted by recognised education programs to make people (especially those living around gibbon and orang-utan habitat) aware of the protected status of the wildlife in their immediate surroundings. Efforts over previous decades to control people from purchasing and keeping wild-caught gibbons and orang-utans have largely proved to be ineffective. It needs to be communicated clearly that keeping protected species as pets is not an option, and this is best achieved by a bold and innovative approach.

13. Throughout Kalimantan, offenders who break wildlife laws, and especially those that violate these laws with respect to orang-utans or gibbons, are not brought to justice. At present it is not clear what are the underlying causes of this. The law-enforcement hierarchy needs to persuade officials to prosecute and convict offenders (hunters, traders, owners, etc.), and attention needs to be given towards devising incentives for law enforcers to carry out their duties with greater efficiency.

Taxonomic changes of orang-utans in CITES

14. TRAFFIC recommends that the Government of Indonesia officially asks the CITES Nomenclature Committee to acknowledge and change the current source of taxonomy for orang-utans, thereby accepting the family Pongidae spp. and the two currently known species of orang-utans, i.e. Bornean Orang-utan *Pongo pygmaeus* (L. 1760) and Sumatran Orang-utan *Pongo abelii* Lesson, 1827³. Given that the gibbons are included in CITES as Hylobatidae taxonomic changes below the family level do not affect the listing of gibbons, yet, for consistency, we recommend the CITES Nomenclature Committee to acknowledge and change the current source of taxonomy for all gibbons. For the primates we suggest to follow the taxonomy as proposed by Groves (2001). The justification for both proposal is two-fold:

These changes would form a better basis for CITES non-detriment findings (NDF, an assessment of sustainability to comply with CITES regulations for wild-harvested species) prior to granting export permits for scientific or educational specimen exchanges under Appendix I. The basis of the NDFs would then have to be much more precautionary and be based on smaller population numbers since they refer to two different taxa restricted in their range as compared rather than the current NDFs which are based on just one orang-utan 'lump sum' taxon extant over two large islands.

For gibbons, species which are currently regarded as sub-species such as *Hylobates albibarbis* would then be augmented to species level, with an equivalent effect as explained above for CITES NDF. Different to orang-utans, the gibbons are much more widespread in Asia, from India and China southward to the Thai-Malay Peninsula and Indonesia, and a joint proposal between Indonesia and one or several other Southeast Asian range countries might be warranted.

³ Currently there is only one species of Orang-utan explicitly listed in the Appendices of CITES, nota bene, not the whole Genus *Pongo*, but explicitly the species *P. pygmaeus*. This contention is based on an outdated primate taxonomy (C.P. Groves in Wilson & Reeder, 1993) used by the CITES Nomenclature Committee that fails to recognise the true phylogenetic status of the two orang-utan taxa. Recently, Groves (2001) published a new primate taxonomy that recognises the two species of orang-utan.

REFERENCES

- Anon. (1990). *The land resources of Indonesia: a national overview from the regional and physical planning program for transmigration*: plates I-XIV. Land Resources Department, National Institute Overseas Development Administration and Direktorat Bina Program, Direktorat Penyiapan Pemukiman, Departemen Transmigrasi, London and Jakarta.
- Anon. (1998a). *Monitoring of primate trade at supermarkets and bird markets in East Java / Monitoring perdagangan primata di supermarket dan pasar burung di Jawa Timur*. KSBK, Malang.
- Anon. (1998b). *The politics of extinction*. Environmental Investigation Agency, London
- Anon. (1999). *Monitoring of primate trade in Java Bali. Orang utan and gibbons still in business*. KSBK, Malang.
- Anon. (2002). *Perdagangan satwa liar dilindungi*. Pantau, Bogor.
- Anon. (2004). Population statistics. Badan Pusat Statistik, Jakarta [http://www.bps.go.id/sector/population, accessed 11 March 2004]
- Anon. (2004b). *IUCN Red List of Threatened Species*. <www.redlist.org>. Downloaded on 08 November 2004
- Bennett, E.L. Caldecott, J., Kavanagh, M. & Sebastian, A. (1987). Current status of primates in Sarawak. *Primate Conservation* 8: 184-187.
- Bennett E.L., Nyani A.J. & Somput J. (1994). *Primates on the menu: hunting and its effects in Malaysian Borneo*. Pp 133 in Handbook and abstracts XVth congress of the International Primatological Society 3-8 August 1994, Bali, Indonesia.
- Bennett, J. (1992). A glut of gibbons in Sarawak - is rehabilitation the answer? *Oryx* 26: 157-164.
- Broad, S., Mulliken, T. & Roe, D. (2003). The nature and extent of legal and illegal trade in wildlife. Pp 3-22 in Oldfield, S. (ed.) *The trade in wildlife. Regulation for conservation*. Flora and Fauna International, Resource Africa and TRAFFIC International, London.
- Caldecott, J. (1988). *Hunting and wildlife management in Sarawak*. IUCN, Gland.
- Caldecott J. (1992). Hunting pattern and their significance in Sarawak. Pp 245-260 in Ismail G., Mohamed M. & Omar, S. (eds) *Forest biology and conservation in Borneo*. Centre for Borneo Studies Publication No. 2, Kota Kinabalu.
- Chen, H.C., Geissmann, T. & Chen, P.C. (2004). A survey of the taxonomic status of captive gibbons in Taiwan. *The Raffles Bulletin of Zoology* 52: 265-269.
- Chivers D.J. (1992). Socio-ecology and conservation of gibbons in Southeast Asia with special reference to Borneo. Pp 230-244 in Ismail G., Mohamed M. & Omar S. (eds). *Forest biology and conservation in Borneo*. Centre for Borneo Studies Publication No. 2. Yayasan Sabah, Kota Kinabalu.
- Cleary M. & Eaton E. (1992). *Borneo, change and development*. Oxford University Press, Oxford.
- Cowlishaw G. & Dunbar R.I.M. (2000). *Primate conservation biology*. University of Chicago Press, London and Chicago.
- Djuwantoko (1981). *Trade and management of wild birds and mammals in Semarang and Yogyakarta, Central Java*. Unpubl. report.
- Duarte-Quiroga, A. & Estrada, A. (2003). Primates as pets in Mexico City: an assessment of the species involved, source of origin, and general aspects of treatment. *American Journal of Primatology* 61: 53-60.
- Eames, J.C. & Robson, C.R. (1993). Threatened primates in southern Vietnam. *Oryx* 27: 146-154.
- Eudey A.A. (1987). *Action Plan for Asian Primate Conservation: 1987-1991*. IUCN/SSC Primate Specialist Group, Gland.
- Eudey, A.A. (1999). *Asian primate conservation - my perspective*. Pp 151-158 in Dolhinow, P. & Fuentes, A. (Eds). *The nonhuman primates*. Mayfield, Mountain View.
- Farmer A.S.D., Caldecott J.O., Phillips A., Prince G. & Thomson N. (1986) *Negara Brunei Darussalam Masterplan. Special report: wildlife conservation and management*. Huszar Brammah and Associates / Department of Town and Country Planning, Bandar Seri Begawan.

- Fuller D.O., Jessup T.C., & Salim A (2004). Loss of forest cover in Kalimantan, Indonesia, since the 1997-1998 El Nino. *Conservation Biology* 18: 249-254.
- Garza, J.C. & Woodruff, D.S. (1992). A phylogenetic study of the gibbons (*Hylobates*) using DNA obtained non-invasively from hair. *Molecular Phylogeny and Evolution* 1: 202-210.
- Geissmann T (1991). Reassessment of age of sexual maturity in gibbons (*Hylobates* spp.). *American Journal of Primatology* 23: 11-22.
- Geissmann T. (1995). Gibbon systematics and species identification. *International Zoo News* 42:467-501.
- Geissmann, T. Nguyen Xuan Dang, Lormée, N. & Momberg, F. (2000). *Vietnam primate conservation status review 2000 - Part 1: Gibbons*. Fauna & Flora International, Indochina Programme, Hanoi.
- Groves, C.P. (2001). *Primate taxonomy*. Smithsonian Institution Press, Washington.
- Hirai H., Wijayanto H., Tanaka H., Mootnick A. R., Hayano A., Perwitasari-Farajallah D., Iskandriati D. & Sajuthi D. (2005) A whole-arm translocation (WAT8/9) separating Sumatran and Bornean agile gibbons, and its evolutionary features. *Chromosome Research* 13: 123-133.
- Janczewski, D.N., Goldman, D. & O'Brien S. J. 1990. Molecular divergence of orangutan (*Pongo pygmaeus*) subspecies based on isozyme and two-dimensional gel electrophoresis. *Journal of Heredity* 81: 375-387.
- Johns, A.D. (1992). Vertebrate responses to selective logging: implications for the design of logging systems. *Proceedings of the Royal Society London Series B* 335: 437-442.
- Kavanagh, M., Eudey, A.A., & Mack, D. (1987). The effect of live trapping and trade on primate populations. Pp 147-177 in Marsh, C.W. & Mittermeier, R.A. (eds) *Primate conservation in the tropical rain forests*. Alan Liss, New York.
- Lammertink, M., Nijman, V. & Setiorini, U. 2003. Population size, Red List status and conservation of the Natuna leaf monkey *Presbytis natunae* endemic to the island of Bunguran, Indonesia. *Oryx* 37: 472-479.
- Leighton D. R. (1987). *Gibbons: territoriality and monogamy*. Pp 135-145 in Smuts B.B., Cheney D.L., Seyfarth R.M., Wrangham R.W. & Struhsaker T.T (eds) *Primate societies*. University of Chicago Press, Chicago and London.
- Leighton, D. R. & Whitten, A.J. (1984). Management of free-ranging gibbons. Pp 32-43 in Preuschoft H, Chivers, DJ, Brockelman, WY, Creel, N, eds, *The Lesser Apes: evolutionary and behavioural biology*. Edinburgh: Edinburgh University Press.
- Manh Ha, N. & Covert H. (2005) Effects of illegal animal trade on primate conservation in Vietnam. *American Journal of Physical Anthropology Suppl.* 40: 157.
- MacKinnon, J. (1974) The behaviour and ecology of wild orang-utans (*Pongo pygmaeus*). *Animal Behaviour* 22: 3-74.
- MacKinnon, J. (1997) *Protected areas systems review of the Indo-Malayan Realm*. The Asian Bureau for Conservation Ltd., Hong Kong and Kent, England
- MacKinnon K. (1987). Conservation status of primates in Malasia with special reference to Indonesia. *Primate Conservation* 8: 175-183.
- MacKinnon K., Irving A. & Bachruddin M.A. (1994) A last chance for Kutai National Park - local industry support for conservation. *Oryx* 28: 191-198.
- MacKinnon, K., Hatta, G., Halim, H. & Mangalik, A. (1996). *The ecology of Kalimantan*. The Ecology of Indonesia Series Vol III. Periplus, Singapore.
- Malone, N., Purnama, A.R. Wedana, M. & Fuentes, A. (2002a). Assessment of the sale of primates at Indonesian bird markets. *Asian Primates* 8: 7-11.
- Malone, N.M, Fuentes, A., Purnama, A.R. & Wedana, I.M.W.A. (2002b). Displaced hylobatids: biological, cultural, and economic aspects of the primate trade in Jawa and Bali, Indonesia. *Tropical Biodiversity* 8: 41-50.
- Meijaard, E., Sheil, D., Nasi, R., Augeri, D., Rosenbaum, B., Iskandar, D., Setyawati, T., Lammertink, M., Rachmatika, I., Wong, A., Soehartono, T., Stanley, S., & O'Brien, T. (2005). *Life after logging. Reconciling wildlife conservation and production forestry in Indonesian Borneo*. Centre for International Forest Research (CIFOR), Bogor.
- Mittermeier, R.A. (1987). Effect of hunting on rain forest primates. Pp 305-320 in Marsh, C.W. & Mittermeier, R.A. (eds) *Primate conservation in the tropical rain forests*. Alan Liss, New York.

- Muir CC, Galdikas BMF, & Beckenbach AT (1998) Is there sufficient evidence to elevate the orangutan of Borneo and Sumatra to separate species? *Journal of Molecular Evolution* 46: 378-379
- Muir CC, Galdikas BMF, Beckenbach AT (2000) mtDNA sequence diversity of orang-utans from the islands of Borneo and Sumatra. *Journal of Molecular Evolution* 51: 471-480.
- Nijman, V. (2001). *Forest (and) primates: conservation and ecology of the endemic primates of Java and Borneo*. Tropenbos International, Wageningen.
- Nijman, V. (2005a) *In Full Swing. An assessment of trade in orang-utans and gibbons on Java and Bali, Indonesia*. TRAFFIC Southeast Asia, Kuala Lumpur.
- Nijman V. (2005b) Decline of the endemic Hose's langur *Presbytis hosei* in Kayan Mentarang National Park, east Borneo. *Oryx* 39: 223-226.
- Nursaid R., Qomariana Y., Kurniawan, I. & Chandra, R. (1996). *Endangered species trade in Java and Bali, an investigation report*. KSBK, Malang.
- Oates, J.F. (1999). *Myth and reality in the rain forest*. University of California Press, Berkeley.
- Oldfield, S. (2003). *The trade in wildlife. Regulation for conservation*. Flora and Fauna International, Resource Africa and TRAFFIC International, London.
- Rijksen H.D. & Meijaard E. (1999). *Our vanishing relative. The status of wild orang-utans at the close of the twentieth century*. Kluwer, Dordrecht.
- Robinson J.G. & Bennett E.L. (2000). *Hunting for sustainability in tropical forests*. Columbia University Press, Vancouver.
- van Schaik, C.P., Husson, S., Meijaard, E., Singleton, I. & Wich, S. (2004). The status of orang-utans in Indonesia, 2003. Pp. 144-167 in Lacy, R., Stephens, S., Leighton, M., Taylor-Holzer, K. Rosen, N & Byers, O. (eds). 2004. *Orangutan population and habitat viability assessment: Draft report*. IUCN/SSC Conservation Breeding Specialist Group. Apple Valley, MN.
- Siegert, F., Rueker, G., Hinrichs A. & Hoffmann, A.A. 2001. Increased damage from fires in logged forest during droughts caused by El Nino. *Nature* 414 : 437-440.
- Singleton, I., Wich, S., Husson, S., Stephens, S., Utami Atmoko, S., Leighton, M., Rosen, N., Traylor-Holzer, K., Lacy, R. and Byers, O. (2004). *Orangutan population and habitat viability assessment: Final report*. IUCN/SSC Conservation Breeding Specialist Group, Apple Valley, MN.
- Sirait M., Prasodjo S., Podger N., Flavele A. & Fox J. (1994). Mapping customary land in East Kalimantan, Indonesia: a tool for forest management. *Ambio* 23: 411-417.
- Smits, W. (2002). *Prosiding seminar perling satwa liar Indonesia and KSBK members meeting*. KSBK, Malang.
- Soehartono, T. & Mardiasuti, A. (2002). *Cites implementation in Indonesia*. Nagao Natural Environment Foundation, Jakarta.
- Seuanez, H., Evans, HJ, Martin, DE, & Fletcher, J. (1979) An inversion in chromosome 2 that distinguishes between Bornean and Sumatran orang-utans. *Cytogenetics and Cell Genetics*. 23: 137-140.
- Warren KS, Verschoor EJ, Langenhuijzen S, Heriyanto, Swan RA, Vigilant L, Heeney JL (2001) Speciation and intra-subspecific variation of Bornean orang-utans, *Pongo pygmaeus pygmaeus*. *Molecular Biology and Evolution* 18: 472-480.
- Wilson, D. E., & Reeder D. M. (eds). 1993. *Mammal Species of the World*. Smithsonian Institution Press, Washington.
- Whitmore, T. C. (1984). *Tropical rain forests of the Far East*. 2nd Edition. Clarendon Press, Oxford.
- Workman, C. (2004) Primate conservation in Vietnam: Toward a holistic environmental narrative. *American Anthropologist* 106: 346-352.
- Xu, X.F. and Arnason, U. 1996. The mitochondrial DNA molecule of Sumatran orangutan and a molecular proposal for two (Bornean and Sumatran) species of orangutan. *Journal of Molecular Evolution* 43: 431-437.
- Yasuma, S. (1994). *An invitation to the mammals of East Kalimantan*. PUSREHUT Special Publication No 3. JIKA, Directorate General of Higher Education, Republic of Indonesia

- Yeager, C.P. (1997). Orangutan rehabilitation in Tanjung Puting National Park, Indonesia. *Conservation Biology* 11: 802-805.
- Yeager, C.P. (ed.) (1999). *Orangutan action plan*. PHPA, WWF and CERC, Jakarta.
- Zhi L, Karesh WB, Janczewski DN, Frazier Taylor H, Sajuthi D, Gombek F, Andau M, Martenson JS, O'Brien SJ. (1996) Genomic differentiation among natural populations of orang-utan (*Pongo pygmaeus*). *Current Biology* 6 (10): 1326-1336.

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