

Chapter 4

THE LAND OF THE ORANGUTAN AND THE BIRD OF PARADISE UNDER THREAT

*Tim Boekhout van Solinge*¹

Willem Pompe Institute, Utrecht University
The Netherlands

ABSTRACT

This chapter addresses the issue of deforestation in Indonesia and its effects on wildlife and people. It takes as a starting point the descriptions by Alfred Wallace (1869) of the Malay archipelago and then discuss the history of deforestation in Indonesia. The focus of the article is on the giant scale of tropical deforestation in Indonesia, which goes faster than anywhere else in the world. Illegal logging and land conversion for oil palm and paper production are the main causes of deforestation on the large islands of Sumatra, Borneo and New Guinea. The article also contains a case study of timber smuggling from Indonesian to Malaysian Borneo, based on a visit in 2005. Deforestation obviously has a negative impact on the wildlife populations, such as tiger and orangutan. While the situation looks grim for the Sumatran tiger and orangutan, the example of the once threatened bird of paradise may serve as an example for further wildlife conservation.

INTRODUCTION

In 1869, the British explorer, geographer and biologist Alfred R. Wallace (1823-1913) published his famous book *The Malay Archipelago: The land of the orangutan, and the bird or paradise: a narrative of travel with studies of man and nature*. Wallace's narrative of the Malay Archipelago became one of the most popular journals of scientific exploration of the nineteenth century, reprinted many times until into the twentieth century. Wallace's work was praised by people like Charles Darwin and novel writer Joseph Conrad.

¹ Email: t.boekhout.vansolinge@law.uu.nl.

Wallace is also known for the “Wallace line” he identified, dividing the fauna of Asia from that of Australia. He was one of the first prominent scientists to raise concern over the environmental impact of human activity. How poignantly right Wallace was on the latter point, is given by the examples of the two rare animals he mentioned in the title of his famous book, the orangutan and bird of paradise. The orangutan is today seriously endangered and might get extinct in the wild within twenty years. The bird of paradise was critically endangered one century ago, but it survived as a result of conservation movements that sprang up.

Indonesia is home to some of the most magnificent tropical forests in the world. They rank third after the Amazon and Congo basins. The Indonesian archipelago contains approximately ten percent of the world’s remaining rainforests. The biological richness of Indonesia is unique, but many habitats are under serious threat due to increased deforestation. Nowhere in the world is tropical deforestation going at a faster rate than in Indonesia; its forests are going down at the speed of six football fields every minute (Aglionby 2005). Forests that in the time of Alfred Wallace were immense and almost impenetrable jungles, are now rapidly shrinking in size or have already disappeared.

It is generally acknowledged that most of the logging in Indonesia is illegal. The estimates on the extent of illegal logging in Indonesia as a part of all logging vary from 70% - 90%. In itself, the phenomenon of illegal logging is not unique to Indonesia. In several tropical countries, most of the timber harvesting is illegal (Oldfield 2005: 124). In South East Asia, estimates for the share of illegal timber harvesting vary from 20-40% in Vietnam, 35% in Malaysia, 50% in Myanmar, 70%-90% in Indonesia, 70% in Papua New Guinea to 90% in Cambodia (Jaakko Pöyry Consulting 2005:4). In an international perspective, the share of illegal logging in Indonesia is large, which may be partly explained by the still widespread corruption.

With regard to logging in South East Asia, large parts of the Philippines and Thailand have already been logged. Large-scale logging currently takes place in Indonesia, Malaysia, Burma, Cambodia, Laos and Vietnam. A common method is that timber is being logged illegally in one country, and is then smuggled to a neighbouring country, from where it is being exported. For example, illegal timber from Cambodia is transported to Thailand and Vietnam, where it is manufactured into furniture which is exported such as to Europe (Aidenvironment 2000: 13). Similarly, timber from Burma is being (illegally) exported through Thailand, and Indonesian timber is smuggled to Malaysia, or it gets a Malaysian bill of lading.

The general geographical trend that can be observed in Indonesian deforestation is from west to east. In the west, large parts of Indonesian Sumatra have already been logged. The lowlands of the more centrally located island of Borneo, especially on the Indonesian side, have also been logged for a substantial extent. Since a few years, the large eastern Indonesian province of Papua has become the focus of large logging operations, mostly illegal.

This chapter addresses the issue of deforestation in Indonesia, its causes, and its effect on wildlife. Why is most of the logging illegal in Indonesia and why is deforestation here occurring faster than anywhere else? What are the mechanisms behind deforestation, what are its prime causes, and what are the consequences for people and wildlife?

The data collection for this chapter mostly consisted of literature research, publications by academics or NGO’s. Fieldwork findings were based on discussions with timber traders and representatives, as well as NGO representatives from Europe and Indonesia. This chapter

also includes impressions from a visit to the interior of Borneo, in Indonesian West Kalimantan. In and around national parks near the Malaysian border, signs of large-scale illegal logging and smuggling operations from Indonesia to Malaysia were occurring on a daily basis and could be easily observed.

This article takes as a starting point the travels of Alfred Wallace in the mid nineteenth century. At the time, Indonesia was still mostly covered with rainforest, in which many wild animals lived, such as tigers, orangutans and birds of paradise. Tigers still lived on the islands of Java and Bali during Wallace's time, but became extinct in the twentieth century. Wild tigers in Indonesia have only survived on the island of Sumatra, but their numbers have dwindled. The orangutan and bird of paradise, which Wallace looked for specifically, were easy to find by him on Borneo and New Guinea. Today, as a result of hunting and deforestation, their numbers are much lower and the animals are consequently harder to spot.

After Alfred Wallace's description of the Malay archipelago, the chapter will continue with the history of deforestation, and focus on illegal logging practices and the illegal timber trade in and from Indonesia. The effects of deforestation on wildlife will be further addressed, such as on tiger and orangutan populations. A practical example will then be given, of timber smuggling operations in the heart of Borneo. The chapter will end with the peculiar story of the bird paradise. Threatened with extinction almost a century ago, it transformed into a symbol of conservation. The story of the bird of paradise may thus serve as an example and inspiration for further species conservation.

THE LAND OF THE ORANGUTAN AND THE BIRD OF PARADISE

Between 1854 and 1862 Alfred R. Wallace travelled through the Malay archipelago, an area today covered by the countries Indonesia, Singapore, Malaysia, Brunei and Papua New Guinea. Most of his travels were in today's Indonesia. In 1869, Wallace published the findings of his explorations: *The Malay Archipelago: The land of the orangutan, and the bird or paradise: a narrative of travel with studies of man and nature*. Wallace is considered as the father of biogeography –the study of the geographical distribution of biodiversity in time and space– and he dedicated the book to his friend and colleague Charles Darwin, who published his famous study *The origins of species* (1859) ten years earlier.

In 1854, Wallace arrived in Sarawak, the now eastern Malaysian province of Malaysia on the island of Borneo. In Chapter IV of his book, called “Borneo—the Orangutan”, Wallace wrote about untouched and magnificent virgin forests, stretching for hundreds of miles in every direction over plain and mountain, rock and morass. One of Wallace's chief objectives in coming to Sarawak was to see the Orangutan, “the great man-like ape of Borneo”, locally known by the Dyak tribes as “The Mias”. One village head told him that “the Mias is very strong; there is no animal in the jungle so strong as he”. Dyak chiefs said that the Mias is never attacked by any other animal in the forest, with two rare exceptions, the crocodile and python, but the Mias was able to kill both in case of being attacked.

Wallace wanted to “obtain good specimens of the different varieties and species of both sexes, and of the adult and young animals”. He succeeded beyond his expectations. Wallace killed seventeen of them, including a mother with a baby, and he ended up with a orphan orangutan of one foot long, which he took as a pet but which died after three weeks. Alfred

Wallace gave detailed accounts of his experience in hunting The Mias, itself unaware of the naturalist's intentions:

“They do not seem much alarmed at man, as they often stared down upon me for several minutes, and then only moved away slowly to an adjacent tree. After seeing one, I have often had to go half a mile or more to fetch my gun, and in nearly every case have found it on the same tree, or within a hundred yards, when I returned”.

Wallace found in Borneo that the orangutan inhabited “many districts on the Southwest, Southeast, Northeast, and Northwest coasts, but appears to be chiefly confined to the low and swampy forests.” (...) The Mias is only found when the country is low level and swampy, and at the same time covered with a lofty virgin forest”.

Although Wallace observed mostly covered rainforests during the fifteen months he spent on Borneo, he also observes mining and sawdust, a sign of large-scale logging and forest clearing. “For several months from twenty to fifty Chinamen and Dyaks were employed almost exclusively in clearing a large space in the forest, and in making a wide opening for a railroad to the Sadong River, two miles distant. Besides this, sawpits were established at various points in the jungle, and large trees were felled to be cut up into beams and planks”.

Java, visited by Wallace in 1861, “may fairly claim to be the finest tropical island in the world”. Java already was the most populated island of Indonesia, and according to Wallace the most populous island in the tropics. He reported the population was about ten million — 8% of today's population of Java— which was mostly restricted to the coastal plains and river valleys. Java was still heavily forested and Wallace described how forests were even covering older civilisations: “for, scattered through the country, especially in the eastern part of it, are found buried in lofty forests, temples, tombs, and statues of great beauty and grandeur; and the remains of extensive cities, where the tiger, the rhinoceros, and the wild bull now roam undisturbed”.

Wallace was in Sumatra from November 1861 to January 1862. He noted that the orangutan is known to also inhabit Sumatra, where it was first discovered, but he did not manage to find one, or to find someone knowing about them. “I made many inquiries about it; but none of the natives had ever heard of such an animal, nor could I find any of the Dutch officials who knew anything about it”. Wallace therefore concluded that that the orangutan “does not inhabit the great forest plains in the east of Sumatra where one would naturally expect to find it, but is probably confined to a limited region in the northwest part of the island entirely in the hands of native rulers”.

In the second volume of his book Chapter 38 is called The Birds of Paradise: “many of my journeys were made with the express object of obtaining specimens of the Birds of Paradise, and learning something of their habits and distribution; and being (as far as I am aware) the only Englishman who has seen these wonderful birds in their native forests”. He recounted that since the earliest Europeans (the Portuguese) arrived in the Moluccas in search of cloves and nutmegs, they were presented “with the dried skins of birds so strange and beautiful as to excite the admiration even of those wealth-seeking rovers”. The Malay traders gave them the name of “Manuk dewata,” or God's birds. The Portuguese called them “Passaros de Col,” or Birds of the Sun. The Dutchmen, writing in Latin, called them “Avis paradiseus,” or Paradise Bird.

For several centuries, the skins and feathers of the bird of paradise were exported and found, for example, at the Court in Nepal and in the Ottoman empire. The beauty and rarity of these birds, almost exclusively found on the island of New Guinea and some of the surrounding islands, gave the bird of paradise a special place in our idea of the tropical nature (Cribb 1997: 457). For a long time, the bird of paradise remained a mysterious bird. Wallace:

“Down to 1760, when Linnaeus named the largest species, *Paradisea apoda* (the footless Paradise Bird), no perfect specimen had been seen in Europe, and absolutely nothing was known about them. And even now, a hundred years later, most books state that they migrate annually to Ternate, Banda, and Amboyna; whereas the fact is, that they are as completely unknown in those islands in a wild state as they are in England. Linnaeus was also acquainted with a small species, which he named *Paradisea regia* (the King Bird of Paradise), and since then nine or ten others have been named, all of which were first described from skins preserved by the savages of New Guinea, and generally more or less imperfect. These are now all known in the Malay Archipelago as “*Burong coati*,” or dead birds, indicating that the Malay traders never saw them alive”.

Wallace did find birds of paradise and managed to obtain specimens of several species. He described how the locals hunted the birds at sunrise, when the birds start to dance, with a blunt arrow to stun the bird and later kill it for its feathers. But even in the Malay peninsula the birds were hard to find and Wallace was very fortunate, he wrote, to find two male birds of paradise on his return in Singapore. He decided to pay the “very high price asked for them”, one hundred pound sterling, and managed to bring them back alive to England, despite the cold March wind on the Mediterranean sea upon arrival in Europe. In London the two birds lived in the Zoological Gardens “for one, and two years, often displaying their beautiful plumes to the admiration of the spectators”.

A SHORT HISTORY OF DEFORESTATION IN INDONESIA

Historian Boomgaard (1997: 419) noted that phenomena like deforestation, threatened biodiversity and consequent conservation measures are not new to Indonesia. Around 1500, an estimated 90% of the area today called Indonesia was still forested. A century later, the Europeans had installed themselves in Asia, but their arrival had hardly influenced agriculture. The most used agricultural method was shifting cultivation, such as for rice. The population density was obviously much lower than today and most of the archipelago was still largely forested.

The arrival of Europeans and Chinese has led to increased land use and harmful effects on the natural environment. The first Europeans arriving in Indonesia were the Portuguese, but the Dutch took over in the seventeenth century, first through the United East Indian Company (VOC), the first multinational, later as a colonising power. From the seventeenth century onwards, Indonesia was increasingly exploited as a source of raw materials or as agricultural land. Europeans introduced new food and export crops such as corn, cassava, tobacco and coffee, which led to an increased demand for agricultural land and lowland areas being deforested. As tobacco needs timber in the drying process and its cultivation much fertiliser, cattle consequently increased in numbers as well, which further increased

deforestation. These trends could be observed in the eighteenth and especially nineteenth century. Coffee on the other hand, was much grown higher up the hills and mountains. A favourite spot for a large coffee plantation was on virgin, high ground forest land. Around 1870, people in Java realised that coffee farming on higher grounds had a negative environmental impact and the Forest Authority started reforesting some areas (Boomgaard 1997: 422-423).

The problem of erosion as a result of deforesting mountainous areas was already known in the nineteenth century. As a result, measures were taken to prevent or avoid erosion, such as putting mats on the soil or planting young trees, and making terraces on hills (known for rice cultivation). Still, during the nineteenth century, the phenomena of eroded hills could already be observed. Having lost their fertile soil, nothing but grass grew on the hills. Lower areas such as agricultural fields could consequently suffer from floods (Boomgaard 1997: 422).

On Java, an important source of deforestation was the exploitation of timber, especially teak. Much the island was still heavily forested, but the Dutch were interested in the teak forests and had started logging them extensively. This practice started in the early nineteenth century, when a road was constructed the length of Java and was quickly extended to many remote parts. Large quantities of timber were felled for local construction and export. By the end of the nineteenth century, the teak forests of Java had been depleted to such an extent that the Dutch administrators began a plantation programme to reforest areas (Fraser 1998: 133).

The European environmental impact on Indonesia is clear. Before their arrival, 90% of Indonesia was covered with forests. In 1941, the first year of which reliable data exist to estimate the extent of forest cover, this was reduced to 66%. In 1941 the Javanese tiger was almost extinct, one rhino type had already disappeared from Sumatra and was threatened with extinction on Java, while another subspecies had become threatened with extinction on Sumatra (Boomgaard 1997a: 415).

The Indonesian history of wildlife and wildlife policy however, also shows some of the solutions of the threat to wildlife. For example, the massive logging by the Dutch of teak timber in Java was stopped around 1900. Moreover, the famous Ujung Kulon nature reserve in West Java has ensured that the Javanese rhino, although already threatened with extinction a century ago, did not get extinct (Boomgaard 1997a: 416). And despite the very high population density on the island of Java (of over 800/km²), the history of conservation has resulted in a remaining forest cover of some 19%, which is double of the UK (Fraser 1998: 134), in Europe considered a tree-rich country.

After WWII, more modern machines and equipment have made logging operations easier. Bulldozers are used to make logging roads and clear forests. As Indonesia is one of the world's most forested tropical countries, its valuable hardwood has been discovered as a source of income for both individual farmers and villagers, as well as for national and multinational businessmen and companies.

Over the last decades however, deforestation in Indonesia has been speeding up rapidly. Country-wide, the deforestation rate was 8000 km²/year during the 1980s. In the early 1990s, this rate increased to around 12,000 km² a year. From about 1996 to the present the annual deforestation rate has almost doubled to more than 20,000 km² a year (Shepherd and Magnus 2004: 4). This corresponds to an area more than half the Netherlands or Switzerland being deforested every year.

MODERN DEFORESTATION: ILLEGAL LOGGING AND LAND CONVERSION

When it comes to illegal timber, law enforcers often think of timber species that are listed in CITES: the Convention on the Illegal Trade in Endangered Species. Animal or plant species listed on one of the CITES appendixes are only allowed to be traded with legitimate permits. The import of CITES timber is hence illegal when the trader or importer does not have the required CITES permit, or when the timber species is listed as another (non CITES) timber species on the bill of lading.

In itself the CITES convention is an appropriate tool for controlling and monitoring the trade in timber species, but as yet its role in this area has been restricted (Oldfield 2005: 125). Besides the limited number of timber species listed (less than two dozens), the international timber trade generally has a low priority in law enforcement around the world and customs or other law enforcement agencies institutions often do not have many specialists capable of recognising and distinguishing protected timber species from other ones.

Although the illegal trade in CITES timber is the most obvious, and most easy to proof type of illegal timber trade, it is not the most prevalent one. A much common form concerns non-protected timber that was logged illegally. This practice of illegal logging can take various forms (see MacAllister 1992). Timber can be logged where no logging is allowed at all, such as in a national park or protected forest. Another form is that logging takes place outside the concession areas, or when certain smaller, larger or more trees are being trees felled in a concession area than the permit allows. Finally, it also happens that other timber species than mentioned in the permit are being logged. The subsequent trade can also be illegal. In the case of Indonesia, a part of the illegally logged timber is being exported through Malaysia, either physically, by smuggling it over the border, or by giving it, on paper, a Malaysian origin.

A specific problem of deforestation in Indonesia is that it is unclear who has the right to give out logging permits. This question has become especially relevant since the policy of decentralisation and regional autonomy was introduced in 2001. Is it the village head (based on customary law), the governor (based on the policy of decentralisation), or the Ministry of Forestry that is allowed to give out logging permits? What is, in any case, clear, is that most logging practices in Indonesia is illegal and that much larger quantities are being exported than the Ministry of Forestry allows. The lack of legal clarity —further exacerbated by the fact that some laws are still in Dutch, the language of the former coloniser— leads to political conflicts about land rights, tax and profits. Illegal logging also leads to social conflicts, such as between villages and companies, or also between villages.

While companies, governors, and some villages profit from the timber trade, other villages feel victimised as the forests on which they are dependent disappear. When loggers make new logging roads, legal or illegal, they construct improvised dams and pass-ways for trucks. This lead to rivers and streams being interrupted or polluted, which in turns leads to angry villagers nearby, being dependent from the river for washing and especially drinking water. Hence, while some villages or village-heads make good fortune with logging, people in others villages experience the disappearing of the natural habitat of which they are dependent.

There is no doubt that illegal logging is a threat to many of the indigenous and tribal groups living in and around the forests. Illegal logging directly affects human right of forest

tribes and age-old societies of hunters and gatherers. It shows there are real victims of the illegal logging practices, which have led to protests across the islands of the archipelago. The protests have ranged from: local and national environmental and human rights groups to university students from the State University of Papua demonstrating against illegal logging, as portrayed in the *Jakarta Post* (2005).

The Indonesian government is well aware of the large extent of illegal logging. Indonesian forestry officials themselves say that illegal logging is widespread and out of control (Sheperd and Magnus 2004: 4). To limit the export of illegal logs and in order to keep at least some control over the trade, the export of round logs was declared illegal in 2001. In 2004, sawn timber exports were also banned. These measures oblige loggers wishing to export, to go to a saw mill first, which can to some extent be monitored by the government. This policy, however, leads to another problem: the existence of many illegal saw mills, especially near the Malaysian border. In Papua, illegal loggers have found another solution to circumvent detection: they now transport the logs in large vessels, not to be seen from the outside. Moreover, the 2001 law change to prohibit the export of round logs, also created legal opacity. Somehow, importing countries did not know about the new law and continued importing illegal round logs. The NGO Environmental Investigation Agency (EIA), concerned about logging in Indonesia, therefore took the initiative to notifying governments, such as the Dutch Minister of Agriculture, for importing Indonesian timber that is not allowed to be exported.

Illegal logging practices are obviously linked to the much prevalent corruption. For example, in Indonesia, it is not expensive for a logging company to bribe a judge. A factor that further complicates the limiting of logging in Indonesia, is the involvement of the Indonesian army (TNI) in the timber trade. Despite the fact that the Indonesian army is a powerful force in Indonesian society, its budget is not guaranteed by the Indonesian State. The Indonesian government only supplies 30% of the army's budget, which results in the fact that the army controls many commercial businesses in order to pay its salaries. Among the army's businesses are logging and timber companies. Although government and army have agreed that the army will stop its commercial activities before 2010, it is likely the army will remain involved in logging in the next years to come. From a perspective of the democratic modern state, it is, of course, undesirable that armed forces are directly involved and largely dependant on commercial activities, especially considering the difficulty of monitoring and controlling armed forces.

Logging for timber is actually not the only cause of deforestation. An equally important reason for deforestation is land conversion: turning forests into profitable agricultural land, especially oil palm plantations. Indonesia and Malaysia have become the world's main exporters of palm oil, which is increasingly used in industrial food products around the world. On Sumatra and Borneo, former tropical forest have transformed into large palm oil plantations, producing palm oil for the world market. The oil palm business has become so profitable, that forest lands are sometimes put on fire illegally, as to facilitate their transformation into palm oil.

In 1997, forest fires on Sumatra and Borneo of almost a million hectares spread to the extent that they created a smog across much of southeast Asia. It was thought they were sparked off by loggers, industrialists and farmers after the failure of seasonal rains. In 2006, large forest fires occurred once more on Borneo, again helped by a prolonged dry period. Besides being a problem for the forests and their inhabitants, these forest fires are now also

acknowledged to pose a global problem. While forests in general store carbon, the tropical such in Borneo store huge amounts. If they are released by future forest fires (in particular the peat forests), it will mean a major global increase of carbon into the air.

A cause of deforestation that is much lesser known and lesser addressed internationally, is the paper and pulp industry. The paper and pulp industry in Asia is growing fast. On Borneo and especially Sumatra, rainforest also disappears as trees are being processed into pulp and paper. In Sumatra's province Riau, the world's two largest paper pulp factories are found, owned by the paper companies Asian Paper and Pulp (APP) and APRIL/RAPP. While both multinationals were supposed to have created sufficient forest plantations, virgin forests are actually disappearing in their paper mills as well. Both companies have been severely criticised for their logging practices, APP in particular. APP, based in Singapore, has the ambition of becoming the world's paper producer. As APP regularly broke agreements and laws, such as by logging much in virgin forests, several international banks have withdrawn after being criticised by NGO's. RAPP, which is part of APRIL paper, has promised to stop the logging of virgin forests before 2008.

While APP has broken laws to the extent that some of the paper it produced could be labelled illegal, it is unclear where APP paper ends up exactly, even though the company claims to sell all over the world. Utrecht University criminology students asked all paper importers in the Netherlands whether they used APP paper, which they all denied. As APP has a bad name, their paper is often put on the market under a different company name. APP representatives in Europe, which could be contacted after much email correspondence, however claimed that APP did have clients in the Netherlands, such as through their U.S. daughter company, PAK 2000, which produces paper bags for popular fashion brands (Campen and Smits 2007).

VISITING THE HEART OF BORNEO

In the forests of Borneo, the age-old practice of hunting and gathering still exists, sometimes combined with agriculture. Villagers like to refer to the forest as their "supermarket", the place where to get food. Another old practice of forest dwellers is shifting cultivation, still practised in the different parts of Borneo. Forest tribes have of course, always used timber for constructing their homes and for fuel.

Forest and local village people are sometimes kept responsible for a big part of the deforestation in the tropics, especially by traders and sales men. For example, when discussing tropical deforestation with timber salesmen or timber company representatives, such as at the 2006 Timber Fair in Ahoy, Rotterdam, they regularly put forward the argument that locals take a larger share in deforestation than the logging companies do. When the issue of illegal logging and illegal timber trade is being discussed, another argument is used regularly, not only by people working in the timber business, but even sometimes by policy makers in The Hague: the timber will be bought anyhow. This argument follows the "logic" that if Europeans do not buy the timber, "the Chinese" will otherwise buy it. Hence, what difference does it make? The timber will be bought anyhow!

In criminology, these types of arguments that shield away one's own responsibility in illegal activities are called neutralisation techniques (see Sykes and Matza 1957). The truth is

that large-scale logging by professionally equipped, often multinational companies is responsible for much more deforestation than the local timber use and shifting cultivation. Japanese researchers have shown in a study on Malaysia that it was “inappropriate to blame shifting cultivation for recent major damage to forests, particularly the recent loss of primary forest” (Jomo et al. 2004: 169). Large scale logging in Malaysia appeared to be much more damaging. Between 1963-1985, 30% of the East Malaysian state of the forests in Sarawak (Borneo) were logged. It led to many local protest by Dayak tribes in the 1980s and 1990s, followed by international protests, which both continue until today.

Although it is true that logging operations in Malaysian Borneo have been damaging for forests, wildlife and Dayak tribes, the forest cover on the Malaysian side of Borneo is still (much) larger than on the Indonesian side. Some Malaysian loggers and timber traders have therefore moved their operations to Indonesian Borneo, which is much larger and contains more forest.

Peripheral and border areas are especially vulnerable for illegal logging and timber smuggling. This applies to the large Eastern province of Papua, to the many smaller islands, as well as the interior of Borneo, where political boundaries cut through dense rainforest. Considering that the Indonesian part of Borneo has most forests, and Indonesia is also, by far, the poorest of the three countries on Borneo, its politically peripheral provinces run the risk of being neglected. Profiting from the absence of a strong state, others step in. When national parks are found along borders, trees and animals can be targets for illegal operations.

The Indonesian Betung Kerihun National Park, in the Indonesian Province of West-Kalimantan, stretches along the border of the Malaysian state of Sarawak. Being on a political border makes the park vulnerable for illegal logging and wildlife smuggling into Malaysia, which started some five years ago. In 2005, WWF Indonesia estimated 300-500 trucks carrying illegal timber from Indonesian Borneo (West Kalimantan) to the Malaysian province of Sarawak crossed the border on a daily basis. The nearby Kapuas river, Indonesia's longest river, is also used for illegal timber transports.

In 2005, the Indonesian police in West Kalimantan dismantled an illegal Malaysian logging operation in Betung Kerihun National Park. The new chief of police decided to act against the loggers, after his predecessor was fired because of his involvement in illegal logging. The parking lot at the police station in the town of Putussibau was filled with confiscated bulldozers, many four-wheel drives, trucks and a large fuel car, all from Malaysia. It showed the professionalism and scale at which the loggers were working. The pictures were also published in local newspapers, such as in the *Pontianak Post* (25 April 2005). The expression “illegal logging” (the English expression has been introduced into the Indonesian language) is actually found almost daily in the Indonesian press. The Malaysians arrested in the operation were working for a known Malaysian timber baron operating from the city of Sibuh, in Malaysian Sarawak. In some local Dayak villages near the national park, this timber baron is considered a “Robin Hood”, as he gave them employment and built some villages new long houses.

Despite the police operation, illegal logging and smuggling continue. The timber smugglers became more careful after the arrests of several Malaysians. The timber is now only smuggled at night, after 6 PM. Moreover, the loggers are usually better equipped for the bad and bumpy roads than the police and customs.

Travelling in and around the national park of Betung Kerihun the effects of illegal logging and smuggling quickly became clear. Along the road to Malaysian Sarawak, meranti

timber, sawn in large beams of four to five meters, was piled up left and right on the road, sometimes meters high. The meranti is logged in the nearby Betung Kerihun national park. It is sawn in or nearby the forest in illegal saw mills, ready to be smuggled into Malaysia. Suddenly, at night fall, many trucks appear on the road. Boys and men appeared on the streets ready to load the timber on the trucks.

On the road of only several dozens kilometres that leads to Malaysia, thousands of cubic meters of meranti can be observed, to be picked by trucks after dark. The closer one gets to the Malaysian border, the higher the timber piles. No law enforcers were seen, but many Malaysian trucks and four-wheel drives, recognisable by the driver's seat being on the left, and often by the absence of license plates as well.

On a boat trip on Lake Sentarum, an extensive reserve of wetlands and lakes with intermittently flooded forests, timber smuggling operations cannot be overlooked. Large rafts of timber, meranti again, are waiting for transport, or are being pulled by a ship to the other side of the lake, to the border town of Badau near Malaysia. From Badau trucks pick up the timber for further transport. There is no other direction then to go than Malaysia. On the other side of the border is the Malaysian town of Engkilili, from where the timber export ports of Kuching and Sibul are reached.

As soon as the Indonesian meranti has crossed the Malaysian border, it can easily be labelled and exported as Malaysian. The Malaysian timber industry works such that as soon timber arrives at a Malaysian saw mill, it is considered Malaysian. In view of the large-scale smuggling to Malaysia, it can be seriously questioned whether all its timber exports are genuinely Malaysian origin. This seems especially plausible as in the State of Sarawak overlap exists between politicians and timber traders. The biggest logging operator in Sarawak and Malaysia was supposedly Senator Tiong Hiew King, who is also the owner of a textile company and the largest Chinese daily in Malaysia (Jomo et al. 2004: 211).

An important reason why law enforcement is virtually absent is the gigantic profits of the timber trade, which enables traders to bribe and involve government officials. While the Malaysian businessmen pay between 10-20 euros for one cubic metre of Meranti, on the international market they sell it for 200 euros. Such profit margins are comparable to the lucrative cocaine trade, which also increases tenfold in price, from the Caribbean (5 euro/gram) to Europe (50 euros/gram).

Not only timber, also other wildlife is subject to smuggling. The animal trade often takes place in the footsteps of the timber trade. Some logging camps near the Indonesian border with Malaysia have many cages with caught wild animals. Local environmental NGO's showed recent pictures of caged birds, cats (such as the clouded leopard), honey bears, monkeys and small orangutans, all to be sold later.

Orangutans in particular are vulnerable to the illegal wildlife trade. They reproduce slowly and are much sought after. It is always a young the hunters are after, to be sold on the international market. The mother is always killed in the event; her physical strength would prevent them from taking her baby. While local forest dwellers may occasionally shoot and eat an orangutan, this practice does not have the same impact on the orangutan populations as the lucrative (illegal) trade. An orangutan can end in one of the small private zoos, such as held by retired Indonesian army officers, or they are sold internationally, such as to Bangkok, a central place in the international orangutan trade. The young ape then may end up in a box ring, with boxing gloves on, put there for human excitement, or the orphaned orangutan may be smuggled further, for example to the United States, where it may be sold for 40,000 euro.

The north of West Kalimantan is one of the five areas inhabited by orangutans. An environmental campaigner met in Putussibau, near the Indonesian Betung Kerihun National Park, declared that he had met an orangutan hunter who had sold twelve babies —for twenty-five euro each— in six months time. The presumed buyer was a Malaysian timber baron in Sibu, whom was referred to earlier. As an orangutan young stays with the mother for seven years, twelve disappearing babies and twelve mothers killed is a huge blow to an already fragile population of maybe 3,000.

DEFORESTING THE LAND OF THE ORANGUTAN?

In the twentieth century, orangutan numbers fell by 90%. Their numbers are estimated to be somewhere between 45,000 and 60,000. Both the Sumatran and Bornean orangutan are threatened with extinction and listed on the red list of the IUCN. The Borneo orangutan is endangered, but the Sumatran orangutan has the status of critically endangered (estimated at some 3,500). In 2004, WWF estimated that Asia's "wild man of the forests", could disappear in just 20 years.

The orangutan is only found in Sumatra and Borneo. On Indonesian Sumatra, the world's sixth island, the Sumatran orangutan (*Pongo abelii*) is found in the north. Borneo, the world's third island and the size of France, is divided among three states: Brunei, Indonesia and Malaysia. The Bornean orangutan (*Pongo pygmaeus*) is living in eight regions, on the Malaysian side (in the provinces Sarawak and Saba) and Indonesian side (Kalimantan).

Orangutans are known to live at low population densities and therefore need large contiguous areas to maintain viable populations. As the remaining patches of undisturbed lowland forest on both islands are rapidly shrinking and becoming increasingly fragmented (Marshall 2006: 566), their habitat and survival are increasingly limited. Their populations are decreasing as a result of deforestation and hunting. The two are obviously linked as deforestation facilitates poaching. Loggers are actually not seldom involved in poaching and trading forest animals.

In northern Sumatra, the numbers of orangutans were estimated 12,000 in 1993, which then was the largest population in the world. In 1998 and 1999 around 1,000 animals were lost per year and their numbers are now estimated to be around 7,500. This shows a very rapid decline by approximately 45% in six to seven years (Schaik et al. 2001). More recent estimates put the current number at 3,500 (Krief 2006: 14). The approximate forest loss on Sumatra was 67,000 km² between 1985 and 1997, most of it being lowland rainforest (Shepherd and Magnus 2004: 4). Schaik et al. (2001) have shown the consequences of the recent wave of forest conversion, and legal and illegal logging, on orangutan numbers on Sumatra. They show that the orangutan's decline is caused by forest loss, logging intensity, and the delineation of logging concessions and legal changes in land use status.

Not only the orangutan, also many other species are obviously threatened by deforestation in Sumatra, such as the forest elephant, rhino, and tiger. In the early twentieth century, Dutch colonists in Sumatra often reported tigers as "a plague", so numerous and bold that they would enter their estate house compounds. In the 1970s, their number was estimated at one thousand, but in the 1980s at several hundreds. According to the last estimate, which dates from the 1990s, their numbers were between 400 and 500, but between 1998 and 2002,

poachers killed some fifty tigers a year, mostly for commercial gain (used in Traditional Asian medicine or as charms or souvenirs). Besides poaching, deforestation also poses a threat to the tiger as habitat critical to both tigers and their prey is rapidly vanishing. Six national parks on Sumatra offer the highest level of protection, but “these areas have been largely isolated from one another through logging and conversion of forest to plantations and agriculture, leaving little or no tiger interchange and gene flow between these separate populations” (Sheperd and Magnus 2004: 5). The trends of deforestation and poaching combined, means that the last Indonesian tiger risks being extinct in the wild.

On the island of Borneo, similar mechanisms can be observed. Deforestation has led to habitat loss for animals such as the orangutans. Densities and population sizes are in decline in all parts of Borneo. The main reasons of deforestation were discussed earlier: logging for timber and land conversion. For example, the area planted with oil palms increased from 2,000 km² to 27,000 km² between 1984 and 2003, leaving just 86,000 km² of habitat available to the species throughout the island. Kalimantan, the Indonesian part of Borneo, lost 39% of its orangutan habitat between 1992 and 2002. On Borneo, the total population is estimated to be a little over 40,000. The Central Bornean population is estimated at around 38,000, the North West Bornean at some 3,000. In a study on a population in East Kalimantan, Marshall et al. (2006: 566-578) showed that hunting is another important cause of declining populations. They found in East Kalimantan (Indonesian Borneo) that “hunting is a far more serious threat to orangutans than are light to moderate logging operations” (Marshall et al. 2006: 576).

DEFORESTING THE LAND OF THE BIRD OF PARADISE?

The island of New Guinea, of which the Indonesian province of Papua (Irian Jaya) forms the western half, is considered to be one of the planet’s most pristine natural places. The dense and large unknown forests are inhabited by hundreds of indigenous groups, as well as by many rare and unknown species, such as various types of the tree kangaroo and bird of paradise. In every expedition to Papua or neighbouring Papua New Guinea new species are found, and sometimes species thought to be extinct. In 2006, dozens of new animals and plants were discovered during an expedition to the Foja Mountains of Papua province, Indonesia. One of the team leaders told the BBC the forest location “was as close to the Garden of Eden as you're going to find on Earth”.

Indonesian Papua is still mostly unlogged, but since a few years loggers have discovered its forest and financial potential, which has become the target of large scale logging operations. Especially merbau, one of the most valuable timbers of South East Asia, a beautiful dark-red tropical hardwood, twice as hard as oak, is much sought after by Indonesian and Malaysian loggers. The timber is then sold, sometimes through Singapore and Malaysia, to India, China, North America and Europe, where is it increasingly used for doors and especially flooring.

In 2005, Environmental Investigation Agency (EIA) and Indonesian NGO Telapak (2005) rang the alarm. They published a report and DVD, *The Last Frontier*, on the large-scale illegal logging of merbau timber and export from Indonesian Papua to China. They showed the direct involvement of Malaysian businessmen and Indonesian army in the giant,

illegal logging operations. Indonesian President Susilo Bambang Yudhoyono reacted by sending army troops to Papua for a crackdown against top forestry officials, army personnel, military police, Malaysian financiers and timber company executives.

A year before, EIA and Telapak (2004), revealed a Malaysian network was stealing the endangered ramin timber from Indonesia's national parks. Indonesia had put ramin on the on Appendix III of the Convention on International Trade in Endangered Species (CITES). Once logged in Indonesia, the timber was smuggled to Malaysia, where it was certified as Malaysian. From Malaysia the timber is transported to China, where it processed in industrial end products such as picture frames, which are then exported to Europe. The profits of these practices would be several millions of euros. The investigators stated that the amount of ramin Malaysia was exporting, was estimated to be more than twice the quantity the country can produce. They claimed that the country's traders circumvented existing bans on the export of Indonesian ramin by reporting it as grown in Malaysia, by issuing false documentation and certificates of origin in order to "launder" the Indonesian ramin. The Malaysian Timber Council (MTC) reacted by rejecting the "generalisations and grossly overstated claim made by the EIA and Telapak". In 2006, EIA and Telapak (2006) released another report, showing how the illegal merbau timber from Indonesian Papua is literally flooding the European and Northern American market through the world's biggest flooring brands.

In April 2006, a state-owned Chinese company was seeking approval from Indonesia for a massive timber operation in Papua province of Indonesia. It aimed to use 800,000 cubic meters of Indonesian merbau timber for the construction of sports facilities for the 2008 Olympic Games in Beijing. The World Conservation Union (IUCN) classifies merbau as a "vulnerable species", while the World Conservation Monitoring Centre classifies Indonesia's merbau population as threatened. Friends of the Earth International called, to no avail, on the People's Republic of China and the International Olympic Committee (IOC) to abort the plans. The Indonesia government however approved the use of some 800,000 cubic meters of Papuan merbau to be used for the Olympic village. A Chinese company invests up to one billion dollar in the construction of the plant and acquiring merbau logs.

PRESERVING THE LAND OF THE ORANGUTAN AND BIRD OF PARADISE

The bird of paradise is the natural symbol of the island of (Papua) New Guinea. Biologists of the 2006 expedition could sometimes pick up birds of paradise, unknown and unafraid as they were to humans. On both sides of island's political border, however, large-scale illegal logging operations have started only some years ago. It now threatens the large forests of the island, which are home to hundreds of tribes and animals such as the bird of paradise.

The story of the bird of paradise is a peculiar one. During the lifetime of Alfred R. Wallace, the bird increasingly became a symbol of beauty and fashion. The demand and hunting increased to such an extent that the bird of paradise became threatened with extinction. The possibility of the famous bird of paradise disappearing, also led to the birth of environmental politics in Indonesia. A policy was set up to preserve the birds of paradise for future generations. Not long after Wallace's death in 1913, the bird of paradise even became a

symbol for conservation. The story of the bird of paradise can be used as an example for future conservation of other species.

When Wallace was travelling in New Guinea, he got the impression that “all, except the common species of commerce, are now much more difficult to obtain than they were even twenty years ago”. Wallace heard of places where many kinds of birds of paradise could be found and he planned to “penetrate into the interior among the natives, who actually shoot and skin the Birds of Paradise”. This however turned out difficult as the locals put forward objections and difficulties. “To understand these, it is necessary to consider that the Birds of Paradise are an article of commerce, and are the monopoly of the chiefs of the coast villages, who obtain them at a low rate from the mountaineers, and sell them to the Bugis traders”. Despite five voyages, Wallace only managed to find five specimens. “Thus ended my search after these beautiful birds”, Wallace wrote, after a description of New Guinea’s land and people:

“The country is all rocky and mountainous, covered everywhere with dense forests, offering in its swamps and precipices and serrated ridges an almost impassable barrier to the unknown interior; and the people are dangerous savages, in the very lowest stage of barbarism. In such a country, and among such a people, are found these wonderful productions of Nature, the Birds of Paradise, whose exquisite beauty of form and colour and strange developments of plumage are calculated to excite the wonder and admiration of the most civilised and the most intellectual of mankind, and to furnish inexhaustible materials for study to the naturalist, and for speculation to the philosopher (Wallace 1869).”

In the eighteenth century, Queen Antoinette of France had stimulated the trade in bird feathers as fashion articles by using them for her robes and hats. During the long period of peace after the Napoleonic wars gave prosperity for a new middle class, bird feathers became increasingly popular. Feathers, wings, heads and sometimes complete birds were used as an ornament or jewellery of nature. High-class women started competing about getting newer and more glamorous feathers. Under these circumstances, increased demand from Europe and America, the trade in birds of paradise was much stimulated. In the course of the nineteenth century, hunters moved to New Guinea for the precious birds and created a “hunter frontier society”. The coastal areas of western New Guinea fell under Dutch colonial rule, but the Dutch presence was limited (Cribb 1997a: 457-458).

Figures of the volume of the nineteenth century trade in birds of paradise are not very accurate. It is however certain that several thousands of bird skins were exported every year. Their numbers would decrease to tens of thousands in the early twentieth century. During the 1910s and 1920s, hats decorated with bird feathers became fashionable among women living in the cosmopolitan centres of Europe and the Americas. Tropical feathers were the most desirable, especially the birds of paradise from New Guinea and the Moluccas.

“From 1905 to 1920, 30,000-80,000 birds of paradise skins were exported annually to the feather auctions of London, Paris and Amsterdam. This demand for birds of paradise plumes inspired Malay, Chinese, and Australian hunters to seek their fortunes in the New Guinean forests (Kirsch 2006: 16)”.

In 1919, the heyday of the fashion and trade, the Netherlands Indies exported 121,284 bird skins as well as 110 kilos of feathers. It concerned many types of birds but the birds of

paradise were the main product (Cribb 1997a: 459). Hence, some fifty years after Wallace's descriptions of the birds of paradise, their feathers had become a sensation. The beauty of the birds, however, also showed their vulnerability.

The rapid disappearing of the birds of paradise helped creating movements for preserving them. Already by the end of the nineteenth century, the growing trade in birds of paradise led to increased concern about their possible extinction. Around 1900 it became clear that the extinction of species was a real possibility. The dodo for example, had already disappeared from Mauritius by 1690, as well as the blue antelope around 1800 and the quagga (a relative of the zebra) in about 1872. In the second half of the nineteenth century, an increasing number of species appeared close to extinction. In the United States, the bison was coming close to extinction and in colonial South Africa, the government issued a notice for the preservation of the elephant and buffaloes in 1858. It was feared that the elephant, rhino and many other would soon follow and be threatened with extinction (Cribb 1997b:387). A further argument for conserving birds, was the increase in ecological knowledge: growing awareness about the risks of species' disappearing on agricultural production. People realised birds played an important role in reducing or preventing plagues of insects. The disappearance of certain birds might have unintended harmful effects on agriculture (Cribb 1997a: 459).

An important reason for the decrease in the bird-of-paradise trade was the disgust over the use of the birds for women's fashion. Cribb (1997a: 460) stated that as a result of the extensive descriptions of the way in which the birds of paradise were killed, it was no longer considered chic to walk with a dead hummingbird or bird of paradise on one's hat. Kirsch (2006: 20) added that concern over the widespread slaughter of wild birds for the millinery trade led to the establishment of the Society for the Protection of Birds in Great Britain (1896) and from 1896 the organisation of modern Audubon Societies – precursors to today's conservation organisations. In 1904, King Edward VII granted a royal charter to the Society for the Protection of Birds. His wife Queen Alexandra announced two years later to no longer wear 'osprey feathers', the generic name for plumage of exotic birds such as birds of paradise.

In this context, a movement for the protection of birds of paradise gave light. In the Netherlands, the so-called Union for the Fight against Horror Fashion published brochures with description of the birds of paradise around 1895. The union got the support of another NGO, the association for the Preservation of Nature Monuments. From 1910 onwards, another ally became the International Commission for the Nature Preservation founded by influential Swiss anthropologist and naturalist Paul Sarasin, who also organised the first international campaigns against whaling. In the United Kingdom, the Society for the Preservation of the Fauna and of the Empire, was willing to extent preservation activities beyond the British empire. Countries like Britain also put pressure on the Dutch to take more legislative steps against the trade (Cribb 1997b: 395).

In several countries measures were taken for preserving the bird of paradise. In 1913, the Lacey Act was passed in the US, which banned (among others) feather imports. The UK passed similar legislation in 1921. Australia and Canada had taken similar measures. In the Netherlands Indies, hunting was being limited. In 1914 the number of birds of paradise subspecies allowed to be hunted was reduced to six; in 1922, that was further decreased to two. As a result of the import restrictions, the trade in birds of paradise decreased

dramatically (Cribb 1997a: 460). Changing attitudes towards the use of exotic birds and birds of paradise in particular, formed the basis for severely limiting the trade.

Against so-called 'responsible' use of the bird of paradise less objections existed. The Dutch considered that hunt for the birds of paradise was an economic incentive for Papua New Guinea, just like ivory and fur for Africa and Canada before. In the early twentieth century, the Dutch authorities therefore were unfavourable to a complete ban on the hunt. Instead, they installed regulations such as hunting permits, restricted hunting (from April to October), restricted gun possession (guns had to be turned in outside the hunting season), as well as high export tariffs. Around 1910, a debate ensued about the pros and cons of paradise bird hunting for New Guinea and its population. The debate lasted for twenty years, during which "economic interests jostled with scientific arguments for influence on policy" (Cribb 1997b: 397).

During the 1920s, a gradual prohibition on the bird-of-paradise hunt was established by the Dutch authorities. Scientific arguments played an important role in the process. In 1912, the Netherlands Indies Society for Nature Protection had been founded and it had started almost immediately lobbying to the government for the creation of nature reserves and the protection of the birds of paradise. The society was predominantly European, but also included Japanese aristocrats and was dominated by scientists. The society also had many international links, which gave the movement more respectability and made the lobby more effective (Cribb 1997b: 398-399). From 1928, it became totally prohibited in the Netherlands Indies to hunt birds of paradise.

In the Netherlands Indies, policy makers were influenced almost immediately by the conservation ideas. In the Dutch colonies, where policy makers thought to stay in power for a long time, scientists were generally better listened to than they were in the motherland, where commercial interests and public opinion were more influential. As a result, policy makers in the Netherlands Indies agreed that preventing the extermination of the bird of paradise had a high priority (Cribb 1997a: 459).

Scientific arguments to preserve the bird of paradise for future generations eventually won over the commercial ones, although sentiment played its part as well. "This combination of science and sentiment, as in contemporary environmental campaigns, put the economic arguments in favour of bird-of-paradise hunting at a great disadvantage" (Cribb 1997b: 404). The analysis of the conservation history of the bird of paradise, saved almost a century ago, can serve as an example of how to conserve other species as well:

"(...) the arguments for environmental protection have arisen primarily out of a modern, scientific understanding on the world. Thus the argument for conservation rests on an understanding that the extinction of a species is possible and that this can happen both by direct extermination and by destruction of its habitat" (Cribb 199b: 380-381).

When the market for birds of paradise disappeared, so did the economic incentives for hunting them. Some smuggling did however continue. Also today it is still possible to find dead birds of paradise in certain districts in Indonesian Papua. A greater risk for the bird of paradise today is not hunting, but the exploitation of the rainforest for mining, transmigration projects and logging. Despite these new threats to the bird of paradise, its conservation history can also serve as an example for conserving species like the tiger, orangutan and many more.

CONCLUSION

When 70% to 90% of all logging activities in a country like Indonesia is illegal, there obviously is a problem of law enforcement. Enforcement is however not the only problem, legal opacity about who has the right to give out logging permits have created confusion, and plays in the background. The involvement of the Indonesian armed forces in (illegal) logging activities is partly explained by the fact that the army is only partly (30%) funded by the national government, but has to find most of its funding (70%) itself. Such a situation of with insufficient legal clarity and insufficiently paid armed forces almost ask for corruption, collusion and logging practices getting out of hand. The physical geography of the “Malay Archileago”, with literally thousands of islands, does not help to curb illegal timber exports, often with the involvement of Malaysian timber barons (EIA and Telapak 2004, 2005, 2006).

Some of the world’s magnificent tropical forest are found in Indonesia, also the largest tropical forests of Asia. But at the same time, nowhere in the world is deforestation of tropical rainforests today occurring at a faster rate than in the Indonesian archipelago. Every year an area at least half of the Netherlands or Switzerland is being deforested. The different causes that can be mentioned are illegal logging (for timber that is mostly exported), land conversion (for oil palm and paper production) and forest fires. Compared to the forested islands Wallace encountered during his travels on the Malay archipelago, not much forest is left today.

The effects of deforestation on Indonesian wildlife are enormous. One can easily speak of an ecological disaster, something that could be labelled an ecological crime . Forests disappear at such great speed that habitats for many wild animals -as well as for forest tribes!- are rapidly shrinking. This article focused on the populations of tiger and especially orangutan, Asia’s man of the forest, which both are now seriously endangered. The decline in the number of orangutans is tremendous. Their numbers are literally plummeting, and if current trends continue, wild populations might be extinct in twenty years. The main reasons are deforestation and poaching. The same two factors are also responsible for the vulnerable position of the only Indonesian tiger that is left, the Sumatran tiger (after the twentieth century extinction of the Javanese and Balinese tiger). Deforestation and poaching are often closely linked, as the first facilitates the second. This phenomenon was illustrated by the example of wild animals being held in cages in illegal logging camps in Indonesian Borneo, near the Malaysian border. This way, massive quantities of timber as well as endangered animals illegally leave Indonesia through Malaysian Borneo, from where they are further exported (possibly by going via West Malaysia first). These activities seem to fit all the characteristics of international organised crime.

In recent years, large scale illegal logging is taking place on the island of New Guinea on both sides of the border: Indonesian Papua and Papua New Guinea. The largest tropical island is considered as maybe one of the world’s most pristine natural places. Large-scale logging however, now threatens the island’s wildlife, as well as the people living in the forests. The popular merbau timber now is the main target of the loggers. The rare, dark-red hardwood is mostly found on the island of New Guinea. The only place where so-called commercial quantities of merbau still exist is here. Illegally logged merbau from Indonesian Papua is today found in many flooring and timber retailing shops all over the western world, as NGO’s EIA and Telapak (2004, 2006) have convincingly shown. If this last large tropical island is to remain as pristine depends on both the supply and demand side of the tropical timber market.

The example of the bird of paradise bird shows that humans are able to save and preserve animals. The famous paradise bird was threatened with extinction one hundred years ago, but it managed to survive thanks to conservation measures. Whether the orangutan and bird of paradise will survive in the wild, therefore also depends on all players involved in the tropical timber trade: buyers, suppliers and governments. The history of the early conservation movement and the role of the bird of paradise may serve as an example of how awareness can be raised about the threat to wildlife and biodiversity that is currently occurring in Indonesia and elsewhere.

In order to prevent these eco-crimes, awareness should be raised about the possibly consequences of the trade in, for example, paper from Sumatra, merbau timber from Papua, and meranti from Borneo. The latter timber (which was witnessed to be trafficked to Malaysian Borneo), is much used in the Netherlands and elsewhere for window frames. It is usually said to originate in Malaysia, but the precise supply chains in the international timber trade are not transparent. Most tropical timber and paper from tropical forests on the market cannot be traced back (yet).

For researchers this means large areas remain unexplored. Much of the research on illegal logging practices in the timber trade and related wildlife trade is now being done by NGO's. If science can join in by studying and consequently help preventing these types of eco-crimes, biodiversity loss can be limited. The history of the bird of paradise show that scientific knowledge and conservation measures combined can prevent the loss of natural habitats, flora and fauna. They can help preventing the infringement of human rights of the people living in the forests.

REFERENCES

- Aglionby, John (2005) Action plan to save home of new species from loggers, *The Guardian*, 26 April 2005.
- Aidenvironment (2000) *Herkomst onbekend. Over illegale kap en de Nederlands houtmarkt*, Amsterdam: Aidenvironment.
- Boomgaard, Peter (1997a) Ten geleide: Mens en natuur in Indonesië. Een ecologische geschiedenis 1500-heden, *Spiegel historiael* 32, nr. 10/11, 414-417.
- Boomgaard, Peter (1997b) Gevolgen van de introductie van nieuwe landbouwgewassen, *Spiegel historicael* 32, nr. 10/11, 415-423.
- Campen, Laura van, and Willemijn Smits (2007) *Nederlandse afzetmarkt voor producten van Asia Pulp and Paper*, Student Paper by Utrecht University criminology students for a course on Policy Papers by Tim Boekhout van Solinge.
- Cribb, Robert (1997a) Paradijsvogels op Nieuw-Guinea. Een pootloos modeartikel, *Spiegel historiael* 32, nr. 10/11, 456-460.
- Cribb, Robert (1997b) Birds of paradise and environmental politics in colonial Indonesia, 1890-1931, in: Peter Boomgaard, Freek Colombijn and David Henley (eds.) (1997), *Paper Landscapes. Explorations in the environmental history of Indonesia*, Leiden: KITLV Press.
- EIA and Telapak (2004) *Profiting from Plunder: How Malaysia Smuggles Endangered Wood*, London: EIA.

- EIA and Telapak (2005) *The Last Frontier. Illegal logging in Papua and China's massive timber theft*, London: EIA.
- EIA and Telapak (2006) *Behind the Veneer: How Indonesia's last rainforests are being felled for flooring*, London: EIA.
- Fraser, Alastair I. (1998) Social, economic and political aspects of forest clearance and land-use planning in Indonesia, in: Bernard K. Maloney (ed.) (1998), *Human Activities and the Tropical Rainforest. Past, Present and Possible Future*, Dordrecht: Kluwer, pp. 133-150.
- Jaakko Pöyry Consulting (2005) *Overview of Illegal Logging*, Report prepared for Australian government, Melbourne: JK Consulting (Asia-Pacific).
- Jakarta Post* (2005) Picture of Papua University students with banners protesting against illegal logging, 15 April 2005.
- Jomo, K.S., Y.T. Chang, K.J. Khoo with others (2004), *Deforesting Malaysia. Political Economy and Social Ecology of Agricultural Expansion and Commercial Logging*, London and New York: ZED.
- Kirsch, Stuart (2006) History and the Birds of Paradise. Surprising connections from New Guinea, *Expedition*, Vol 48, pp. 15-21, essay based on Ph.D. study by Kirsch (2006) *Reverse Anthropology: Indigenous Analysis of Social and Environmental Relations in Papua New Guinea*, Stanford: Stanford University Press, 2006.
- Krief, Sabrina (2006) Are Humans just another Great Ape?, Interview by Mambaele Mankoto, *A World of Science*, Vol. 4, No. 1, January-March 2006, pp. 13-15.
- MacAllister, Debra J. (1992) *Illegal Timber Trade : Asia-Pacific*, Cambridge: Traffic International.
- Marshall, Andrew. J., Nardiyono, Linda M. Engström, Bhayu Pamungkas, Jhon Palapa, Erik Meijaard, and Scott A. Stanley (2006) The blowgun is mightier than the chainsaw in determining population density of Bornean orangutans (*Pongo pygmaeus morio*) in the forests of East Kalimantan, *Biological Conservation*, 129: 566-578.
- Oldfield, Sara (2005) Regulation of the timber trade, in Sara Oldfield (ed.) (2005) [2003] *The Trade in Wildlife. Regulation for Conservation*, pp. 121-131.
- Schaik, Carel P. van, Kathryn A. Monk, J. M. Yarrow Robertson (2001) Dramatic decline in orangutan numbers in the Leuser Ecosystem, Northern Sumatra, *Oryx* 35 (1), 14–25.
- Sheperd, Chris J. and Nolan Magnus (2004) *Nowhere to hide: the trade in Sumatran Tiger*, A TRAFFIC South East Asia.
- Sykes, G.M. and D. Matza (1957) Techniques of Neutralization: A Theory of Delinquency, *American Sociological Review* 22 1957: 664-670.
- Wallace, Alfred R. (1869) *The Malay Peninsula. The land of the orangutan, and the bird or paradise: a narrative of travel with studies of man and nature*, two volumes, London: Mamillan.