



UNEP



A RAPID RESPONSE ASSESSMENT

STOLEN APES

THE ILLICIT TRADE IN CHIMPANZEES, GORILLAS, BONOBOES AND ORANGUTANS



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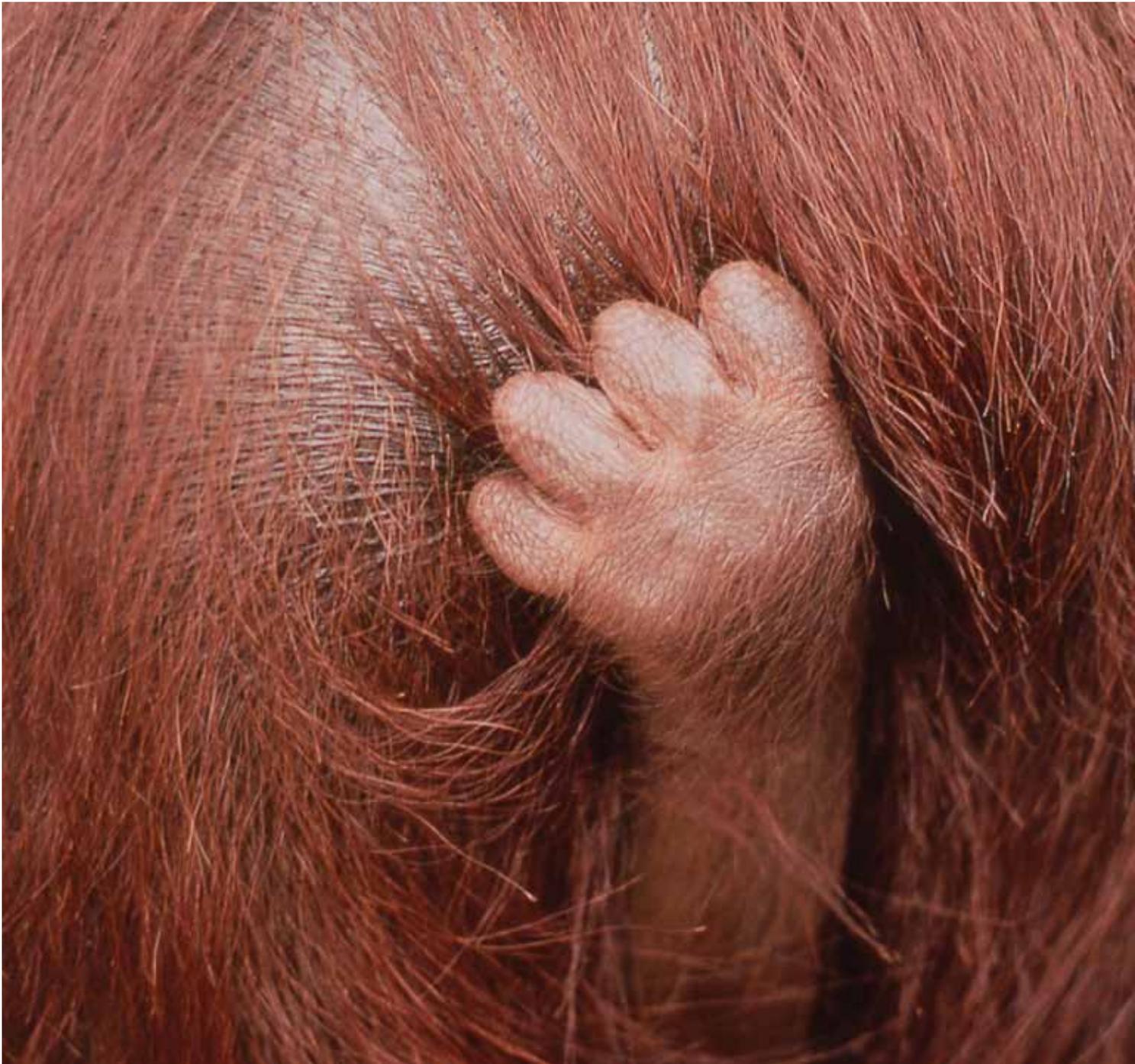
STOLEN APES

THE ILLICIT TRADE IN CHIMPANZEES, GORILLAS, BONOBO AND ORANGUTANS

A RAPID RESPONSE ASSESSMENT

Editorial Team Daniel Stiles
Ian Redmond
Doug Cress
Christian Nellemann
Rannveig Knutsdatter Formo

Cartography Riccardo Pravettoni



PREFACE

The trafficking of great apes adds additional and unwelcome pressures on charismatic fauna that provide an impetus for tourism and thus revenues to the economy.



The illegal trade in wildlife makes up one part of the multi-billion dollar business that is environmental crime and is increasingly being perpetrated at the cost of the poor and vulnerable.

These criminal networks, operating through sophisticated chains of intermediaries, steal the heritage and the natural resources of countries and communities working towards sustainable development, jeopardizing existing successes in the achievement of the Millennium Development Goals and undermining the transition towards resource-efficient Green Economies.

UNEP, working with partners such as INTERPOL and operating under agreements like the UNEP-hosted Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the UNEP/UNESCO Great Apes Survival Partnership (GRASP), is attempting to bring attention to the issue, build awareness at the political and public levels and catalyze a response.

This report focuses on the trade of great apes – bonobos, chimpanzees, gorillas and orangutans. The trafficking of these animals adds additional and unwelcome pressures on the already endangered species, which in many of their range States, attract tourism and thus contribute to the local economy.

The trafficking of great apes is not new – it has gone on for well over a century. But the current scale of trafficking out-

lined in this report underlines how important it is that the international community and the organizations responsible for conserving endangered species remain vigilant, keeping a step ahead of those seeking to profit from illegal activities.

The illegal trade in great apes mirrors the recent spike in elephant and rhino poaching, as well as the rise in illegal logging. UNEP and INTERPOL recently launched a report showing that between 50 and 90 per cent of the logging taking place in key tropical countries of the Amazon Basin, Central Africa and Southeast Asia is being carried out by organized crime, threatening not only local species – including many great apes where they occur – but also jeopardizing efforts to combat climate change through initiatives such as the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD)

In a world where natural resources are increasingly scarce, addressing illegal activities on the ground and across supply chains is increasingly challenging. However, such action should be also an opportunity to improve cooperation between nations and ensure a more sustainable planet.

Achim Steiner

UN Under-Secretary General and UNEP Executive Director

PREFACE

The countries that host these primates, including those who import and consume these species, are called upon to put an end to this sinister international traffic.



The countries of West and Central Africa are home to populations of gorillas, chimpanzees and bonobos. These great apes make up an important part of our natural heritage. But as with all things of value, great apes are used by man for commercial profit and the illegal trafficking of the species constitutes a serious threat to their existence.

Many range countries are engaged in a process that aims to protect the great apes. This process needs sustained and coordinated actions on the ground to ensure the survival of great apes.

Along with governments, the public should play an important role to establish partnerships for the conservation of primates and other wildlife. Opportunities for transitions to Green Economies should also be explored, in order to ensure sufficient resources for the rural and urban populations living in great apes habitats.

The countries that host these primates, including those who import and consume these species for meat and trophies, are

called upon to close their respective borders to put an end to this sinister international traffic.

We are convinced of the progress that is observed across great apes range States in West and Central Africa, and see this UNEP-GRASP report as a way to raise awareness among stakeholders to promote great ape conservation. Only by understanding how many primates are taken from their natural environments each year, can we put an end to this black market.

We welcome the efforts started by many other governments around the world towards this objective.

Henri Djombo

Minister, Forest Economy and Rural Development,
Republic of Congo

PREFACE

Recent investigations reveal that major ape dealers have each exported hundreds of apes. This number is only a fraction of the total number of apes captured for the live trade.



To date, conservation efforts have failed the great apes. Year after year, conferences and seminars celebrate a “renewed” engagement to save the great apes, which leaves the participants, as well as the public, with a feel-good sense of optimism. Then, year after year, we are surprised that conservation efforts barely affect the race towards extinction.

But why should we be surprised? Too often, efforts to save the great apes have been designed without measurable standards or indicators that might lead to tangible results. A system that lacks accountability and does not monitor its progress is doomed to fail.

Meanwhile, organized criminal networks choose a more results-oriented approach and are busy in an ever-growing illegal trade in great apes. This international trade, whether for bushmeat or for the pet market, is sophisticated and linked to other forms of crime, such as drugs and arms trafficking. The illegal trade in apes has little to do with poverty. It is instead generated by the rich and powerful.

Recent investigations reveal that major ape dealers have each exported hundreds of apes. This number is only a fraction of the total number of apes captured for the live trade, as apes are prone to high mortality rates during the trafficking process. Despite being known to local authorities and to international institutions, these criminals roam free, relying on a system of corruption and complicity that allows them to operate with relative impunity.

There is a large gap between our declarations and our actions. If there is any hope to ensure the conservation of great apes, it lies in a major paradigm shift. So let us stop the talking and refocus our efforts on what matters: enforcement. Let us make 2013 the year that we begin counting the number of major ape dealers behind bars.

Ofir Drori
Founder, Last Great Ape Organization

SUMMARY

Great apes have become a commodity. In the past decade, a series of alarming reports from international experts, United Nations (UN) agencies, conservation organizations and media outlets have revealed numerous cases of organized illegal trafficking and trade of gorillas, chimpanzees, bonobos and orangutans. Environmental crime now ranks among the most significant illegal activities in the world, and the live trafficking of great apes is part of this global multi-billion dollar trade.

Given the wide range of illegal activity, relatively little is known about the scale and scope of the trade in great apes. This Rapid Response Assessment (RRA) was initiated to provide the first overview of the extent of the illicit global trade in great apes, and to offer concrete recommendations for the mitigation of its potentially devastating impact on the remaining wild populations.

Great apes are trafficked in various ways. In many cases wild capture is opportunistic: farmers capture infant apes after having killed the mother during a crop-raid, or bushmeat hunters shoot or trap adults for food, and then collect the babies to sell. However, organized illicit dealers increasingly target great apes as part of a far more sophisticated and systematic trade. They use trans-national criminal networks to supply a range of markets, including the tourist entertainment industry, disreputable zoos, and wealthy individuals who want exotic pets as status symbols. Great apes are used to attract tourists to entertainment facilities such as amusement parks and circuses. They are even used in tourist photo sessions on Mediterranean beaches and clumsy boxing matches in Asian safari parks.

Conservative data suggests that the illegal trade in great apes is widespread. Over the past seven years, a minimum of 643 chimpanzees, 48 bonobos, 98 gorillas and 1,019 orangutans are documented to have been captured from the wild for illegal trade. These numbers are based on figures from 2005 to 2011 that comprise confiscation and arrival rates of orphans at sanctuaries in 12 African countries and rehabilitation centres in Indonesia, expert reports, and great ape bushmeat and body parts seized from traders. Many studies suggest that far more apes are either killed during the hunt or die in captivity than are ever confiscated, and law enforcement and customs officials admit that only a fraction of any contraband is ever seized.

Based on extrapolations, it is likely that as many as 22,218 wild great apes were lost between 2005 and 2011 related to the illegal trade, with chimpanzees comprising 64 per cent of that number. The annual average loss of 2,972 great apes could have serious consequences for the biodiversity of key regions, given the important role great apes play in maintaining healthy ecosystems.

There is also evidence that the illegal trade has shifted from being a by-product of traditional conservation threats such as deforestation, mining and bushmeat hunting to a more sophisticated business driven by demand from international markets. Since 2007, standing orders from zoos and private owners in Asia have spurred the export of over 130 chimpanzees and 10 gorillas under falsified permits from Guinea alone, an enterprise that requires a coordinated trading network through Central and West Africa.

Sadly, law enforcement efforts lag far behind the rates of illegal trade. Only 27 arrests were made in Africa and Asia in connection with great ape trade between 2005 and 2011, and one-fourth of the arrests were never prosecuted.

The loss of natural great ape range in Africa and Asia helps drive the illegal trade, as it promotes contact and conflict between apes and humans. Projections suggest that great ape habitat is being lost at the rate of 2-5 per cent annually, and that by 2030 less than 10 per cent of their current range will remain unless challenged. In Southeast Asia, the conversion of rainforest for agro-industrial use happens so quickly that orangutans are flushed from the forest, and end up being captured, killed, or trafficked. Only a small percentage of these apes are rescued and placed in rehabilitation centres.

In Africa, the proliferation of logging and mining camps in ape range areas has, in addition to rapidly growing towns and villages, fuelled extensive bushmeat markets. These same markets drive the direct killing of adult and juvenile apes and lead to the capture of infants, which are then sold into the live trade.

Prices for great apes vary greatly. A poacher may sell a live chimpanzee for USD 50-100, whereas the middleman will resell that same chimpanzee at a mark-up of as much as 400 per cent. Orangutans can fetch USD 1,000 at re-sale, and gorillas illegally sold to a zoo in Malaysia in 2002 reportedly went for USD 400,000 each. Such prices are extremely rare however, and the poacher who captures a live specimen may lose it to injuries, illness or stress, or have it confiscated if the poacher is arrested. At best, the actual poachers may earn only a fraction of the ultimate sale price of a great ape.

The primary offenders and profiteers of the live trade of apes are criminals who transport great apes by plane, boat, or over land by train and other types of vehicles. The large number of air strips in the African bush, as well as smaller airports found primarily near infrastructure or resource exploration projects, allow smugglers to transport apes directly out on private cargo planes, usually bypassing customs officials. Other smuggling routes involve the ferrying of apes via boat or over land.

It is evident from this RRA as well as from previous reports from the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and concerned non-governmental organizations (NGOs) that the live trade in great apes and the continued violations of the Convention must be taken seriously. The fight against the trade must tackle both organized crime and combat demand, while reducing bushmeat hunting associated with logging, mining, or agricultural expansion. Conservation and law enforcement efforts in protected areas are also crucial for reducing the number of apes being caught.

This can only be done if CITES and national laws are enforced, if the trans-boundary criminal networks involved are investigated, if traffickers are arrested and prosecuted, if deterrent sentences and punishment are enforced, and if markets for this illegal trade are closed.



RECOMMENDATIONS

Organized trafficking

- Investigate international great ape traffickers and buyers for complicity in trans-boundary organized crime.
- Prosecute those accused of participating in the organized trans-boundary crime of great ape trade to the fullest extent of the law.
- Designate national customs units to specifically address environmental crime and carry out inspections targeting the live trade of great apes and other wildlife at airports (both regional and international), ports, and major roadways.
- Emphasize inspections for illegal trade exports and imports.
- Establish trans-national criminal intelligence units targeting environmental crime to ensure that intelligence is compiled, analyzed and shared with national police forces, customs and INTERPOL.
- Improve the training of police officers, customs officials, and the judiciary on the issues of illicit trade in great apes, environmental crime and wildlife trafficking.
- Increase enforcement of protected areas, to both reduce illegal trade in great apes and to protect their habitat.

Law enforcement

- Establish an electronic database that includes the numbers, trends and tendencies of the illegal great ape trade, and monitor arrests, prosecutions and convictions as a means of assessing national commitment.
- Create law enforcement indicators that can accurately gauge national commitment.
- Review national laws and penalties relating to the killing and trafficking of great apes and support efforts to forcefully implement and strengthen those laws.
- Incorporate anti-corruption measures into law enforcement efforts to protect great apes, and urge governments to report annually on efforts to counter corruption.
- Introduce both revised CITES permits and revised reporting systems that minimize forgery and falsification.

Consumer demand

- DNA-test all confiscated great apes and return to country of origin – if discernible – within 8 weeks of confiscation.
- Utilize national and international multimedia campaigns to eliminate the trade/ownership/use of great apes and emphasize laws and deterrent punishment.
- Require CITES authorities to control the exploitation of illegally trafficked great apes in entertainment facilities and zoos.
- Support efforts to end the use of trained great apes in films, television shows or advertising.



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INTRODUCTION

Why are great apes bought and sold? For trade of any kind to occur, there must be both supply and demand, and while this report largely deals with the supply side, it is also important to consider the demand. Why do people want great apes? And why is this desire so strong in some individuals that they are prepared to pay significant sums of money for them?

GREAT APE TRADE – A HISTORICAL PERSPECTIVE

Great apes have long been associated with status and wealth. Apes have been traded since ancient times and are mentioned in the Bible along with gold, silver, ivory and peacocks among the precious things imported by Solomon in the Old Testament. Apes are also found in Egyptian hieroglyphics. They were brought from exotic lands across great distances to royal courts to provide entertainment and amusement.

Following the age of European exploration from the 15th to 17th centuries, and as methods of transportation began to improve, Europe expanded its royal menageries into an ever-increasing number of zoological gardens in the 18th and 19th centuries. Great apes became very popular with the public and circuses, travelling menageries, and entertainment parks sought to acquire great apes in order to draw crowds. In the 20th century, gorillas had become so prized that they could fetch USD 150,000 (Van der Helm and Spruit 1988). By this time, thou-

Apes have been traded since ancient times and are mentioned in the Bible along with gold, silver, ivory and peacocks among the precious things imported by Solomon in the Old Testament.

sands of chimpanzees, gorillas and orangutans had been torn from their forests and families, with even more killed as ‘collateral damage.’

The situation worsened from the 1930s onwards, particularly for the chimpanzee. The close genetic relationship between chimpanzees and humans resulted in the widespread use of the ape as test subjects for behavioural and biomedical research in universities and medical schools. Indeed, thousands of chimpanzees lost their freedom and lives through scientific research, and a significant number were even drafted into the United States space program – which culminated with the United States sending a pair of chimpanzees into space in 1961. Sierra Leone alone exported more than 2,000 chimpanzees for use in biomedical research, zoos, the entertainment industry and pet trade between the 1950s and 1980s (Teleki 1980).

Europe and North America’s casual dominion over great apes through the centuries differs sharply from the relationships between great apes and the people living near ape habitats. These tribes knew great apes well, and considered them almost as neighbours to be fought, hunted, eaten, or treated with respect, depending on the prevailing local traditions. In the Congo, these traditions can vary from village to village, with some people saying they would eat chimpanzees, but not gorillas. Others believe that “gorilla meat was fine but chimpanzees are too close to humans” (Redmond 1989). Similarly, some tribes in Borneo and Sumatra believed that orangutans were labourers who fled to the forest to avoid work, and some tribes traditionally eat orangutan meat while others do not.

The most vulnerable ape

Although the largest and perhaps most fearsome of the great apes, gorillas are actually very susceptible to stress and many die during the capture and transport portions of the illegal trade chain. As a result, the price tag – and the death toll – for gorillas has always been high.

Until the mid-19th century, travellers' tales of the gorilla were written off by armchair naturalists as the product of over-active imaginations. Once the species had been scientifically described (Savage and Wyman 1847), however, frequent attempts were made to transport live gorillas to America and Europe. Most of these efforts met with total failure and many of the explorers and adventurers who wrote of their travels described the inherent difficulties.

The French-American traveller and anthropologist Paul du Chaillu, who is best remembered for his dramatic accounts of hunting gorillas, also tried to keep some of the young that he and his hunters had orphaned alive. In the published account of his adventures (du Chaillu 1861), he describes the “continual moroseness” of a young male he named Joe. After a fortnight in a bamboo cage, eating little and attacking anyone who approached, Joe escaped, was recaptured and then kept on a chain. Although he showed signs of improvement, Joe died suddenly two days after falling ill, and du Chaillu remarked that “to the last he continued [to be] utterly untameable.”

In the late 19th century, animal traders were attracted by the price of GBP 1,000 offered by zoos for a pair of gorillas (Collodon 1933), but these efforts usually ended in failure. Wildlife trader Augustus C. Collodon recounted the horrific end to his only attempt to capture live gorillas in the Congo region:

“In the morning, we discovered that the male gorilla had been spending most of the night trying to bite the handcuffs off. Of course, he had not succeeded, but he had managed to do something much worse. He had bitten through the flesh of his arm round the handcuffs right through to the bone! His self-inflicted injuries were so bad that we had to shoot him to put him out of his pain and misery. On his death, the female languished away in despair and grief, and died after a time, from a broken heart.”

The largest shipment of gorillas ever attempted was probably that made by Armand Denis in 1944. In his autobiography, (Den-

is 1963) he described in some detail the netting and spearing of gorilla groups by native hunters of a village called Oka, in what was then French Equatorial Africa, now the Republic of Congo. Without a doubt, Denis regarded the infants he collected as a by-product of hunting for meat, and he hoped to set up a colony for non-invasive research in the United States. Before he could find a ship heading back to the United States however, his apes died, one by one, of what was diagnosed as a ‘mystery virus disease.’

Historically, in Rwanda, where gorilla meat is not eaten, gorillas were known to be killed so that body parts such as fingers, testicles, and hair could be collected for *sumu*, a kind of African ‘black magic’ (Fossey 1983). In Congo, it seems unlikely that any gorillas are killed solely to acquire parts for potions or charms, but these are an important by-product of the meat trade. A number of sources mention that charms to imbue the owner with the power or ‘force’ of the gorilla are used; the desire to eat gorilla meat may stem partly from a belief that by doing so one gains some of the ape’s presumed power.



International Initiatives Battling the Illegal Trade in Great Apes

International Consortium on Combating Wildlife Crime (ICWC)

ICWC was established in 2010 to battle powerful criminal syndicates that are threatening important animal and plant species. Consisting of five international agencies - the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), INTERPOL, the United Nations Office on Drugs and Crime (UNODC), the World Customs Organization (WCO) and the World Bank – the ICWC works to craft a comprehensive and collaborative approach to help prevent illegal trade.

Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)

CITES is an international agreement between voluntary States to regulate the international trade in endangered species of fauna and flora to ensure it does not threaten their survival. CITES entered into force in 1975 and today 177 States are signatory to the Convention (CITES, 2013a). A licensing system designates over 30,000 endangered species as Appendix I, II or III and tasks an Authority to manage the system. All international trade in species listed in Appendix I – including the great apes – is generally forbidden.

Great Apes Survival Partnership (GRASP)

GRASP is a unique alliance launched in 2001 that joins nations, research institutions, UN agencies, conservation organizations, and private supporters in the effort to protect great apes and their habitats in Africa and Asia. GRASP is the only species-specific conservation programme within the UN. At the 2nd GRASP Council in 2012, the partnership voted to make “Rule of Law & Judiciary” a GRASP priority in order to support efforts to “combat the illegal domestic and international trade in great apes and great ape parts and to enforce laws protecting great apes and great ape habitat.”

TRAFFIC

TRAFFIC is a global wildlife trade monitoring network established in 1976 to ensure that trade in wild plants and animals is not a threat to the conservation of nature. TRAFFIC, a joint-partnership between the World Wide Fund for Nature (WWF) and the International Union for the Conservation of Nature (IUCN), has developed into a research-driven, action-oriented organization that delivers innovative and practical conservation solutions. TRAFFIC is active in over 25 countries around the world, and in

2009 it published *An Assessment of Trade in Gibbons and Orangutans in Sumatra, Indonesia*.

Great Ape Integrity (GAPIN)

GAPIN is an international enforcement initiative coordinated by WCO that has resulted in the seizure of more than 22 tonnes and 13,000 pieces of protected wildlife. Launched in 2010, GAPIN is financed by the Government of Sweden and works to combat the illegal cross-border trade in great apes and other wildlife species, while also cracking down on corrupt practices that help to fuel illicit trafficking.

International Criminal Police Organization (INTERPOL)

INTERPOL confronts the illegal trade in wildlife through its environmental crime programme, which includes flora and fauna, pollution, hazardous waste, carbon trade and water management. A significant proportion of both wildlife and pollution crime is carried out by organized criminal networks, drawn by the low risk and high profit nature of these types of crime. INTERPOL leads global and regional operations to crack these networks and coordinate international resources.

The Association of Southeast Asian Nations Wildlife Enforcement Network (ASEAN-WEN)

ASEAN-WEN coordinates the regional response to illegal trade in protected species, which threatens biodiversity, endangers public health, and undermines economic well-being. It is the world's largest wildlife law enforcement network and involves police, customs and environment agencies in Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Vietnam and Thailand, and works to facilitate increased capacity and better coordination and collaboration of law enforcement agencies between Southeast Asian countries, regionally and globally.

Last Great Ape Organization (LAGA)

LAGA is the first wildlife law enforcement NGO in Africa and was created in 2002 to combat the illegal trade in great apes and ivory in Cameroon. Since then, LAGA has expanded into a regional network that includes satellite programmes in Congo, Guinea, Gabon and DR Congo, and focuses operations in four main areas: investigation, operations, legal assistance and media. Since 2006, LAGA has helped arrange the arrest of a wildlife dealer every single week, and 87 per cent of these are held without bail.



GREAT APE POPULATIONS

All great ape species have experienced considerable declines in population size and range over the past few decades. The International Union for Conservation of Nature (IUCN) Red List of Threatened Species lists all of the great apes as either Endangered or Critically Endangered and all great apes except the Mountain gorillas show decreasing population trends. Most notably, fewer than 300 Cross River gorillas are left in West Africa; as few as 2,000 Eastern Lowland gorillas remain; and it is believed that as few as 6,600 Sumatran orangutans can be found in the wild.

GORILLA

Gorillas are divided into two species: the Eastern gorilla (*Gorilla beringei*) and the Western gorilla (*Gorilla gorilla*). In addition, each species has two sub-species: Mountain gorillas and Eastern Lowland gorillas belong to the Eastern gorilla species, and the Western Lowland gorillas and the Cross River gorilla belong to the Western gorilla species (Groves 2001).

Mountain gorilla

There are two populations of Mountain gorilla (*Gorilla beringei beringei*): one in the Bwindi Impenetrable Forest National Park in Uganda (extending into the Sarambwe Forest in DR Congo), and the second in the Virunga Volcanoes conservation area comprising the three national parks that straddle Rwanda, Uganda and eastern DR Congo. In 1989, the Virunga sub-population was estimated at 320 individuals, but by 2010 the population had climbed to 480. In Bwindi, the population had been estimated at just over 300 in 2006, but DNA analysis of the 2011 census recently confirmed a population of 400. This estimated total of 880 individuals makes Mountain gorillas the only ape known to be recovering in numbers (Gray *et al.* 2006; Robbins *et al.* 2011).

Eastern Lowland gorilla

The Eastern Lowland gorilla (*Gorilla beringei graueri*), also known as the Grauer's gorilla, is only found in the eastern low-

land forests and hills of DR Congo. The population, which in 1995 was estimated at almost 17,000 individuals (Hall *et al.* 1998), has decreased rapidly over the last three decades (Mittermeier *et al.* 2012), mainly due to massive forest loss, fragmentation, illegal mining, bushmeat hunting, and the capture and trade of infant apes. These forces are to a great extent driven by on-going political unrest and military activity in the area. There are no confirmed figures on populations, but recent IUCN estimates suggest that between 2,000 and 10,000 individuals remain (Nixon *et al.* 2012).

Western Lowland gorilla

The Western Lowland gorilla (*Gorilla gorilla gorilla*) is found in Cameroon, the Central African Republic, Equatorial Guinea, Gabon, Congo, DR Congo and the Cabinda region of Angola. As with the Eastern Lowland gorilla sub-species, the Western Lowland gorilla population has been declining steadily in recent years and the current estimated numbers are around 150,000 (A.P.E.S Portal 2013). In 2008, the discovery of gorilla populations in northern Congo doubled the previous estimate, but that discovery was not seen as a population increase. Instead, the conservation community regarded the gorillas as previously uncounted individuals. Western Lowland gorilla populations are threatened by various factors, including Ebola outbreaks in dense populations, poaching for bushmeat and fetish uses, the trade of live infants, and habitat destruction through logging, mining and petroleum extraction (Nellemann *et al.* 2010).



Cross River gorilla

The Cross River gorilla (*Gorilla gorilla diehli*) is found in 11 pockets of forest on either side of the border between Nigeria and Cameroon. It is believed between 200 and 300 individuals exist (A.P.E.S Portal 2013), making it the world's rarest great ape. In fact, no film footage or photographs of the Cross River gorilla existed for years, and the only living specimen was taken to the Limbe Wildlife Centre in Cameroon in 1994 after being captured by poachers. Finally, in 2012, a camera trap in Cameroon recorded almost two minutes of footage of a Cross River gorilla family passing through the forest.

BONOBO

Since 1996, bonobos (*Pan paniscus*) have been designated an Endangered Species by the IUCN Red List. The species is only found in the low-lying central Congo Basin of DR Congo, where small groups are found south of the Congo River. There is no complete data on bonobo populations; however, some estimates suggest a population of between 29,500 (Myers Thompson 1997) and 50,000 (Dupain and Van Elsacker 2001), with more recent estimates suggesting a minimum population of 15,000–20,000 (IUCN/ICCN 2012). Major

threats to the bonobo include poaching for bushmeat, pets and medicines, human population movements and growth, as well as changes in habitat due to timber extraction, mining and war.

CHIMPANZEE

The chimpanzee (*Pan troglodytes*) is found in 21 countries across Equatorial Africa, yet has been classified Endangered on the IUCN Red List since 1996. The four sub-species of the chimpanzee include the Eastern chimpanzee (*Pan troglodytes schweinfurthii*); the Central chimpanzee (*Pan troglodytes troglodytes*); the Cameroon – Nigeria chimpanzee (*Pan troglodytes elioti*); and the West African chimpanzee (*Pan troglodytes verus*). Combined, these four sub-species are distributed across the African continent from southern Senegal and Guinea in West Africa, across the Congo Basin to western Uganda and western Tanzania in East Africa. As with all the other great apes species, the chimpanzee population is in decline, and is recently believed to have become extinct in four countries: Gambia, Benin, Burkina Faso and Togo (IUCN Red List 2012; Ginn *et al.* 2013). Estimates indicate that the total chimpanzee population is between 294,800 and 431,100 (Oates *et al.* 2008; Plumptre *et al.*



BONOBO



CHIMPANZEE



SUMATRAN ORANGUTAN



BORNEAN ORANGUTAN

2010; Kormos *et al.* 2003; Morgan *et al.* 2011). Habitat destruction and fragmentation, poaching, respiratory diseases, and other diseases such as the Ebola virus and anthrax are among the primary threats that chimpanzees face.

ORANGUTAN

The orangutan is the only great ape found in Asia, and historically is thought to have once ranged across Indochina. Today, two distinct species are found on the islands of Borneo and Sumatra, respectively. The Bornean orangutan is divided into three further sub-species.

Sumatran orangutan

The Sumatran orangutan (*Pongo abelli*) has been listed as Critically Endangered since 2000 and its population has decreased by 80 per cent over the last 75 years (Wich *et al.* 2011). This species is native to the Indonesian island of Sumatra and today mainly inhabits the northern end of the island as a result of habitat loss and human encroachment. An estimated 6,600 wild individuals are left, based on nest density surveys and models applied to satellite images of forest distribution (Wich *et al.* 2008; Mittermeier *et al.* 2009), although exten-

sive forest clearance and fires in Tripa in 2012 are likely to have reduced the overall number.

Bornean orangutan

The Bornean orangutan (*Pongo pygmaeus*) is found on the island of Borneo, in areas governed by Indonesia and Malaysia. The species is divided into three sub-species: the Southern Bornean orangutan (*Pongo pygmaeus wurmbii*); the Northeastern Bornean orangutan (*Pongo pygmaeus morio*); and the Western Bornean orangutan (*Pongo pygmaeus pygmaeus*). The species has been classified as Endangered on the IUCN Red List since 1986 – with an exception in 1996, when it was briefly listed as Vulnerable. As with its Sumatran relative, the population of Bornean orangutans has declined by 50 per cent over the last 60 years, and an estimated 1,950 to 3,100 individuals have been killed annually over the last few decades in Indonesian Borneo, which is higher than the rate at which the species can reproduce (Meijaard *et al.* 2011). The Bornean orangutan is endemic to Borneo, where it inhabits patchy areas in the central, north eastern and north western part of the island. The latest population estimates indicate a total population of 54,000 remaining in Borneo (Wich *et al.* 2008).

...and population estimates

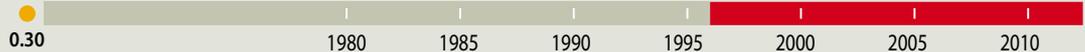
Population estimates

Thousands

IUCN Red List category

Cross River gorilla

0.30

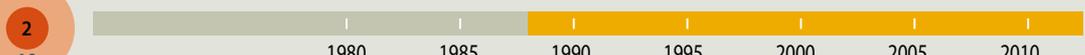


Mountain gorilla

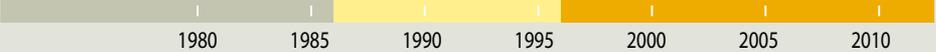
0.88



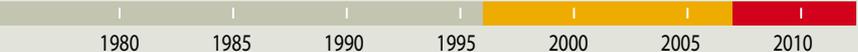
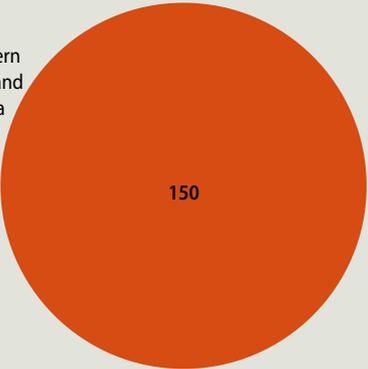
Eastern Lowland gorilla



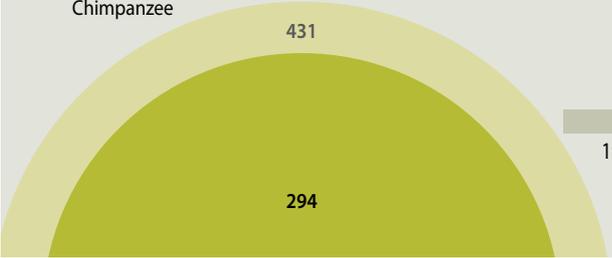
Bonobo



Western Lowland gorilla



Chimpanzee



Vulnerable
 Endangered
 Critically Endangered



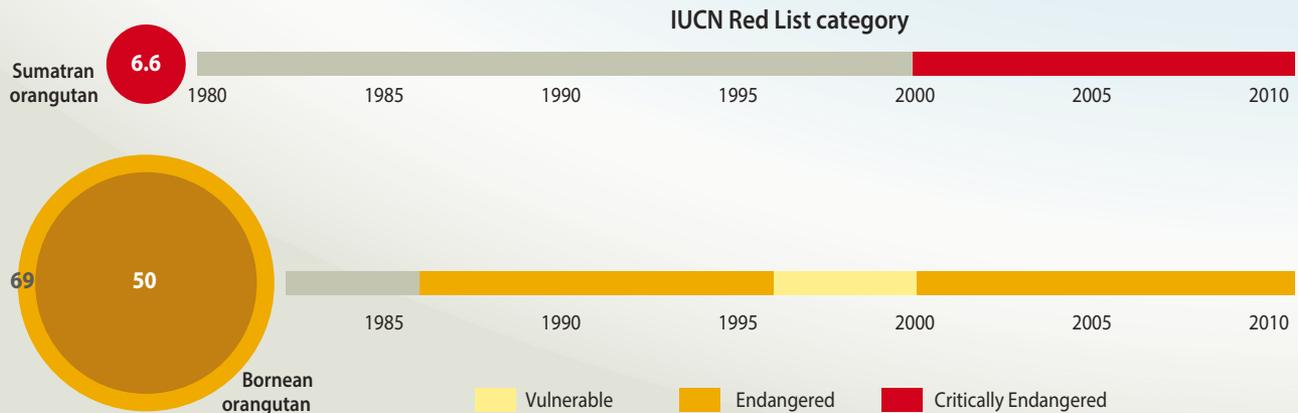
Source: IUCN online database, accessed on February 2013

Orangutan range and population estimates



Population estimates

Thousands



CHALLENGES AND UNCERTAINTIES IN MAKING POPULATION ESTIMATES

The quantity and quality of information available on both the status and trends of ape populations, and on the threats to and opportunities for conservation have improved considerably over the last decade. However, because of limited resources, it is still not possible to make regular status updates so as to identify threats before they cause great damage. Nor is it possible to evaluate the effectiveness of conservation activities or, if needed, look for promising alternatives. Several studies have shown that ape populations can decline within a disturbingly

short period of time - over the course of months or even weeks. For this reason, information on ape populations can become outdated very quickly. The existing data on ape population sizes and rates of change must be regarded as educated guesses.

It is likely that this situation will improve over the next decade. The scientific and conservation communities are increasingly joining efforts to combine local and regional information on great ape populations to assess ape status, evaluate conservation activities and develop tools to assess ape population status. The A.P.E.S. Portal was created to facilitate this process and to provide the most accurate data.

Ape populations can decline within a disturbingly short period of time – over the course of months or even weeks. For this reason, information on ape populations can become outdated very quickly.



By 2030, less than 10 per cent of great ape habitat in Africa will be undisturbed by infrastructure development, and less than 1 per cent of the orangutan's undisturbed habitat in Asia will remain.



THREATS TO GREAT APES

The lack of accurate data is a considerable constraint to discussions of the range of great apes. However, numerous studies have shown a continuous loss of great ape habitats (Nellemann *et al.* 2007; Nellemann and INTERPOL 2012). Deforestation, agricultural expansion, increased hunting for bushmeat, mining and logging camps are all threats to the range area of great apes.

The GLOBIO modelling system projects range and biodiversity loss in over 75 global regional and tropical studies and indicates the loss of biodiversity, human expansion, as well as habitat and range loss regionally and globally (Nellemann *et al.* 2003; Leemans *et al.* 2007; Benítez-López *et al.* 2010; Pereira *et al.* 2010; Visconti *et al.* 2011; Newbold *et al.* 2013).

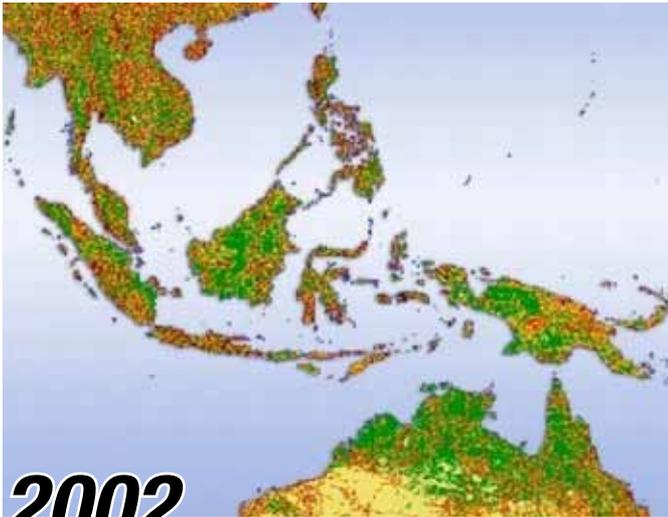
The GLOBIO model integrates data from satellite imagery and land-use changes from the IMAGE model, with information regarding human population density and growth, resource abundance and exploration, pollution, climate change and many other additional factors (see Alkemade *et al.* 2009 for review and www.globio.info). Under the assumption that the density of human infrastructure and cropland is a good proxy for range loss, GLOBIO model outputs were used to estimate projections of current loss, based on the Special Report on Emissions Scenarios' (SRES) A1 scenario as outlined by the Intergovernmental Panel on Climate Change (Alkemade *et al.* 2009; IPCC 2000).

Results from the GLOBIO analyses indicate that nearly 70 per cent of the habitat of all of the great ape species has been negatively affected by infrastructure development. In the case of the orangutan, 64 per cent of its natural habitat has been encroached upon by human activity (Nellemann and Newton 2002; Nellemann *et al.* 2007; Wich *et al.* 2011; Nellemann and INTERPOL 2012)). Future scenarios suggest that the annual loss of undisturbed habitat will be greater than 2 per cent in the case of the African great apes, and 5 per cent in the case of the orangutan in Southeast Asia. By 2030, the scenarios suggest that less than 10 per cent of the great ape habitats in Africa will be undisturbed by infrastructure development, and less than 1 per cent of the orangutan's undisturbed habitat will remain.

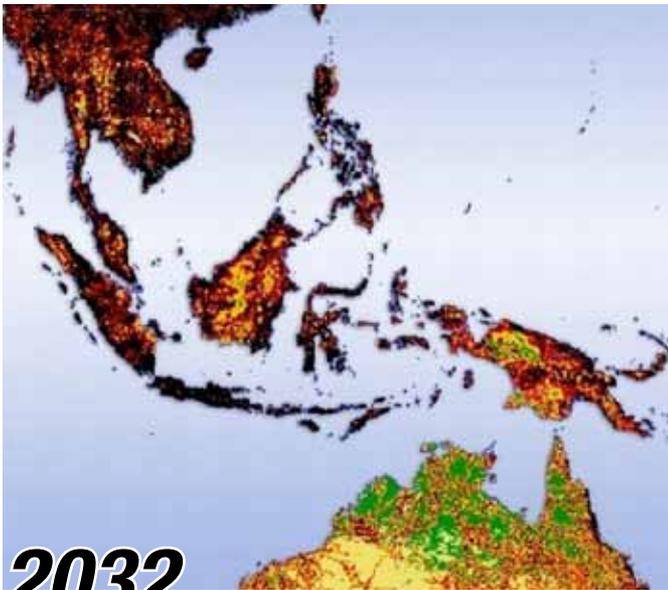


These figures are supported by estimates of habitat loss and degradation made by great ape field researchers (Nellemann and Newton 2002; Nellemann *et al.* 2007; Wich *et al.* 2011; Nellemann and INTERPOL 2012).

Overall, the continuous loss of ranges in many parts of Southeast Asia is happening quickly and many of the orangutans emerging from the forest seeking new territory are captured and placed in refugee centres, killed for food and in human-ape conflicts, or sold in illegal trade (Hockings and Humle 2009; Nijman 2009; Campbell-Smith *et al.* 2010). In Africa, as ranges diminish, the many logging and mining camps and expanding towns have developed extensive bushmeat markets that in addition to the direct killing of both adult and juvenile apes, lead to the capture of infants, which are then sold into the live trade markets.



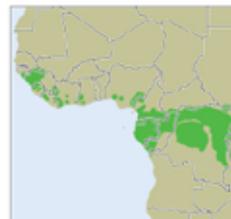
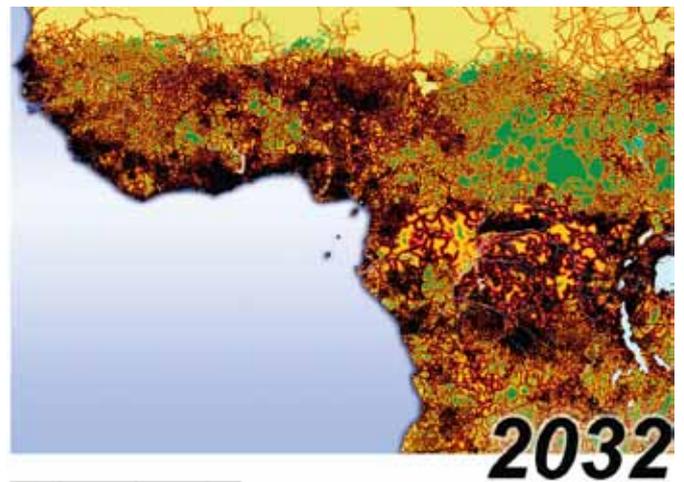
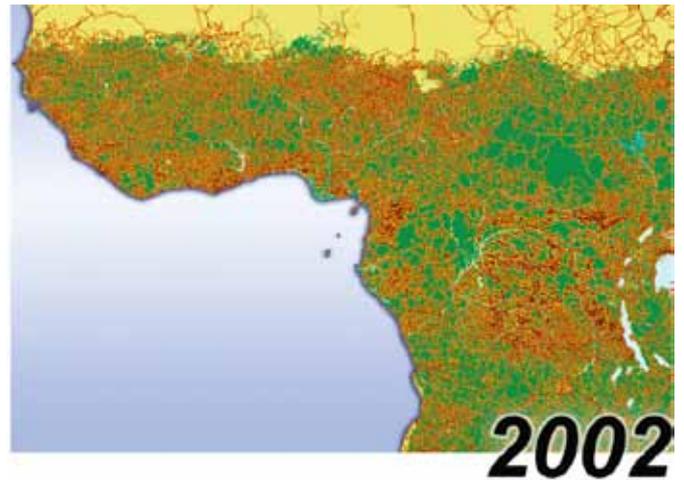
2002



2032

Scenarios of human development and pressures on biodiversity (GLOBIO 2.0) in areas that are likely to affect orangutan ranges in Southeast Asia. The maps illustrate areas affected beyond the known and possible orangutan ranges, and provide a general indication of where human agricultural and population pressures are particularly likely to increase.





Current distribution of African great apes (Chimpanzee, Bonobo and Gorilla).

- High impact
- Medium - high impact
- Low - medium impact

Source: The Great Apes - the Road Ahead. UNEP 2002.

Range loss and pressures to great ape habitat as a result of projected infrastructure development, population growth and agricultural expansion in Africa.

Stories of Trafficking of Great Apes

Stuffed in a Cardboard Tube

In late 2000, customs officials at the Doha airport in Qatar noticed a cardboard tube moving suspiciously in the baggage area. Upon opening the tube, inspectors found two infant chimpanzees wedged end-to-end inside the package. The chimpanzees were confiscated and ultimately sent to a sanctuary in Zambia.

2000

2001

Drowned in Cairo

On September 17, 2001, officials at Cairo airport intercepted an illegal shipment from Lagos, Nigeria, containing two infant apes: one gorilla and one chimpanzee. The apes were accompanied by their owner, a woman who said they were pets, even though she did not have a permit to transport them. Alarmed by reports of apes carrying deadly infectious diseases, and despite the urgent efforts of animal welfare NGOs, the decision was taken to euthanize both animals by drowning them in a vat of chemicals.

The 'Taiping Four'

In January 2002, one male and three female infant Western Lowland gorillas were shipped from Nigeria via South Africa to the Taiping Zoo in Malaysia. The Taiping Zoo claimed the gorillas were part of an animal exchange programme with Nigeria's Ibadan Zoo, and that the gorillas were captive-bred, even though the Ibadan Zoo's only living gorilla was an elderly female and the last male had been stuffed and was on public display. In fact, a wildlife dealer in Nigeria had illegally imported the gorillas from Cameroon and reportedly received a combined price of USD 1.6 million for them. The gorillas were transported under valid CITES permits. Subsequent reports indicated that the Ibadan zoo keepers knew the gorillas had originated from Cameroon. After 14 months of high-level negotiations that sought the return of the gorillas to Cameroon, Malaysian authorities decided to send them back to Africa – but to South Africa. Only after a delegation of senior Cameroon officials visited Pretoria, was an agreement reached to repatriate the gorillas in November 2007.

2002

Chimpanzees in a Box

In February 2005, customs officials at the Nairobi airport seized a large crate labelled 'dogs' that had arrived from Egypt. Inside they found six chimpanzees and four monkeys stuffed into tiny compartments. The crate had been refused by Egyptian authorities at the Cairo airport due to insufficient permits, and the woman accompanying the crate returned to Nigeria without her luggage. Although one of the chimpanzees died almost immediately from hunger and thirst, the rest were sent to a sanctuary in Kenya.

2005

Bonobo in a Handbag

In December 2005, two travellers in possession of Russian passports – a Ukrainian and his Congolese companion – boarded an Air France flight from Kinshasa bound for Russia carrying an infant bonobo in a handbag. Air France officials accepted their permit from the DR Congo Ministry of Agriculture as valid, and it was not until a wildlife activist on the plane reported the couple that the ape was confiscated. Airport authorities at first intended to euthanize the bonobo for fear of Ebola or other deadly diseases, but arrangements were made instead to send the bonobo to a sanctuary in DR Congo. The travellers, meanwhile, continued their journey to Russia without delay or questioning. Passenger records indicated that they were frequent travellers on the Moscow-Kinshasa route; suggesting that this kind of traffic was a common occurrence.

Apes and Drugs

In January 2006, a drug dealer was arrested in Cameroon. In the boot of his car, officials discovered 50 kilograms of marijuana and a baby chimpanzee wedged between the sacks. The dealer was also found to be in possession of cocaine, and admitted that he had been regularly trading other protected primates, and employed at least five poachers.

2006

Chimpanzees to China

Beginning in 2007, a large number of chimpanzees were exported from Guinea to China under valid CITES permits that declared the animals to be captive-bred. A CITES mission to Guinea in 2011 found that 69 chimpanzees had left the country in 2010 alone, all destined for Chinese zoos or safari parks that were quick to parade their acquisitions before the media as 'imported' from Guinea. Investigations led by NGOs and private individuals have revealed that as many as 138 chimpanzees and 10 gorillas have been exported via travel routes established by Chinese development companies. No captive breeding facility exists in Guinea and investigators suspect that the apes were taken from Congo, Cameroon, Cote d'Ivoire, Liberia, or other neighbouring countries, in addition to Guinea.

2009

Orangutans and Ostriches

On June 30, 2009, Malaysian wildlife authorities raided an ostrich breeding farm in Selangor and confiscated three infant orangutans that had been smuggled onto the mainland – including two that were being kept at the Taiping Zoo. Although records suggest that five orangutans were initially smuggled, there was no evidence of the remaining two. Taiping Zoo officials, meanwhile, insisted that 'anonymous people' had donated the orangutans.

2010

2012

Rescue and Prosecution

On October 9, 2012, an infant chimpanzee offered for sale was confiscated in the Congolese port of Brazzaville. Although the dealer fled, wildlife law enforcement officers were able to arrest the boat's captain and a member of his crew for transporting illegal cargo, an offence under Congolese law. This led to the naming and arrest of the trafficker as well. The owner of the boat tried to corrupt the due legal process by threatening those involved in the arrest and claiming connections to the Congolese president, but the suspects remain under arrest and await trial. The chimpanzee, who suffered serious injuries as a result of his ordeal, nearly died from tetanus but was taken to a sanctuary in Pointe-Noire, Congo, where he recovered.

TRENDS IN THE ILLEGAL TRADE IN GREAT APES

Up until the late 19th century, the export of live great apes from African and Asian forests to the royal courts of antiquity was relatively low. But European and American audiences were soon anxious to view great apes in zoos and circuses, and with the advent of modern transportation, the 20th century saw the beginning of large-scale, albeit legal, trafficking of chimpanzees, gorillas and orangutans. With no international wildlife trade laws and a lack of animal health regulations, great apes were shipped in large numbers from colonies Asia and Africa to European and American ports. In the hundred-year period between the mid-19th century and the Second World War, an untold number of great apes were torn from their forest homes for use in entertainment and biomedical research.

Beginning in the 1970s, the wild capture and import of great apes for zoos and research waned (Van der Helm and Spruit 1988; Altevogt *et al.* 2011; Kabasawa 2011). The last chimpanzee believed to have been imported from Africa to an American zoo arrived in 1976. Today, the legal great ape trade has virtually ceased, and reputable zoos now exchange apes as part of breeding programmes rather than buying and selling them.

This has not spared mankind's taxonomic cousins from the illegal trade, however. As human populations grow and infrastructure development projects flourish, ape habitats are increasingly under threat, and the ecosystems they depend upon for food and living space are vulnerable. Today, more great ape populations may be lost through deforestation, conflict with farmers and developers, and the illegal trade than were lost to the zoos, circuses and research facilities in the past.

Although cloaked in secrecy, there are indications that what is termed the 'pet' trade may also be increasing. Karl Ammann, a Swiss photographer who has been investigating great ape trafficking for almost three decades, believes that a paradigm shift is occurring. "This [bushmeat hunting producing orphans] is still true for many parts of Central and West Africa but not for some others where the orphan trade seems to have become a driving motive for going out and hunting chimps and gorillas," he has said (pers. comm. Ammann to Daniel Stiles 2012a).

It was recently found that even in undisturbed forest areas, the encounter rates with orangutans in Borneo had declined dramati-

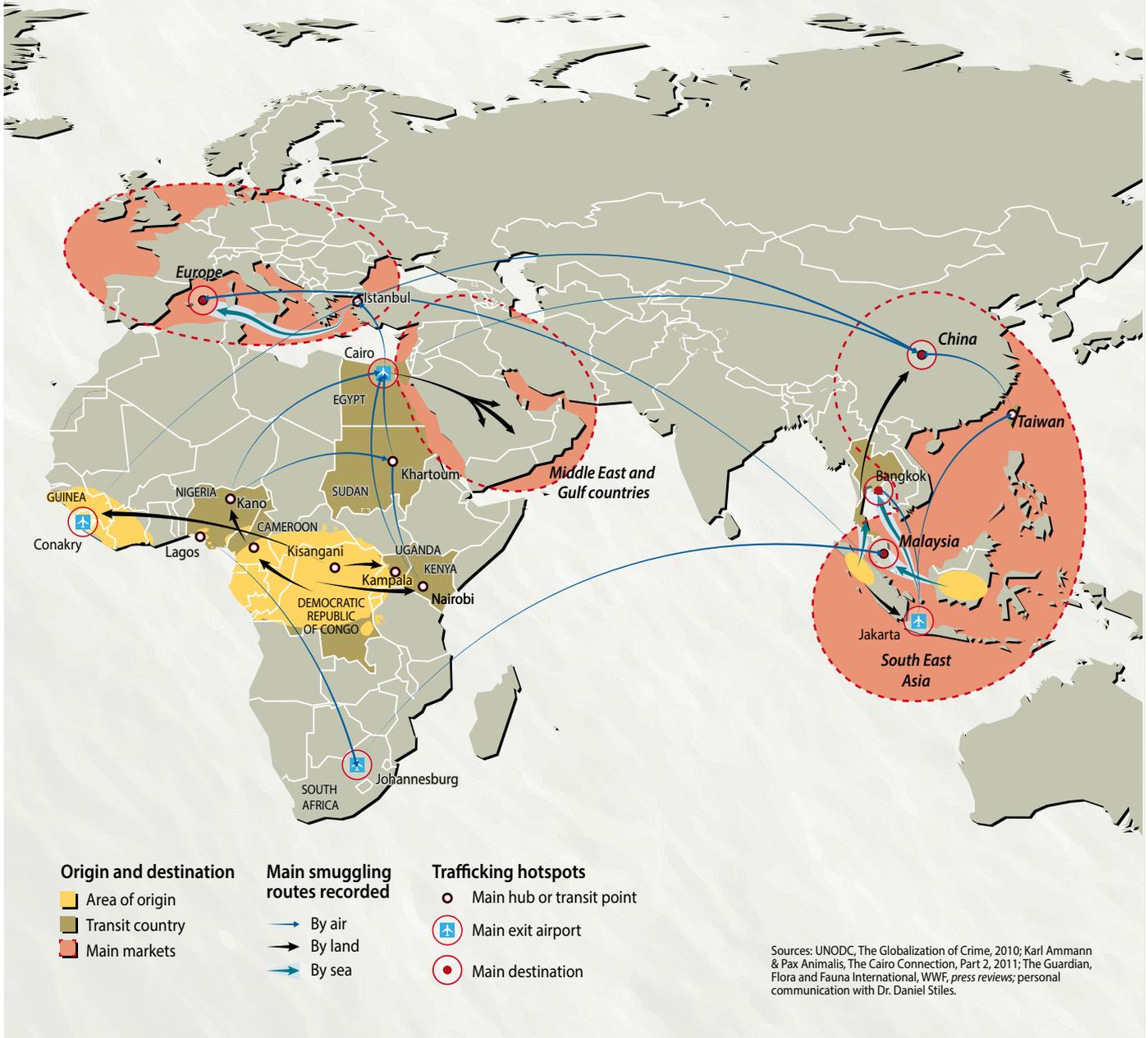
cally from the mid-19th century, when Alfred Russell Wallace found them plentiful (Meijaard *et al.* 2010). Researchers concluded that the drastic decline in density was a result of hunting for food, trophies and live trade, not habitat loss. In 2005, it was estimated that between 200-500 orangutans were traded annually in Kalimantan and, despite substantial financial investment in conservation of wildlife, the trade in gibbons and orangutans was probably as widespread then as it had been at any time (Nijman 2005a). Similarly, a survey of the newly created Sankuru National Reserve in the DR Congo found that bonobos had been hunted out of their ideal habitat (Liengola *et al.* 2009), and there is evidence that chimpanzee and gorilla abundance in Gabon and northern Congo has been affected negatively by hunting, regardless of forest type (Maisels *et al.* 2010a).

An IUCN review of studies in six key bonobo habitats concluded that poaching was the greatest direct threat to their survival (IUCN/ICCN, 2012). A recent study found that bonobo meat was sold in Kisangani in 2008-2009, where it had been absent in 2002, indicating that the bonobo is now traded over long distances (Van Vliet *et al.* 2012). Since the live trade is often a by-product of bushmeat hunting, it would be logical to infer that trade rates are on the increase in correlation with greater hunting frequency.

NGOs promoting wildlife law enforcement in Central Africa, including the Last Great Ape Organization (LAGA), and the Project for the Application of the Law for Fauna (PALF), have demonstrated that the individuals who are involved in poaching and trafficking are also involved in the live trade of apes and the killing of apes for meat, curios and ritual purposes. Since the 1980s, these activities have been on the rise. Another indicator of the rise in the hunting and live trade of great apes is the surge in the number of ape sanctuaries established since the 1980s and the number of rescued apes that they hold. Most sanctuaries, unfortunately, are now at or beyond capacity.

Great ape losses due to habitat destruction, hunting, live trade and disease are so intertwined that it is difficult to attribute population trends to any one cause. It would be safe to say that increasing human pressures in great ape territories is the primary causes of population loss, combined with demand for live great apes, meat and body parts.

Main international routes for the illegal trafficking of great apes



Sources: UNODC, The Globalization of Crime, 2010; Karl Ammann & Pax Animalis, The Cairo Connection, Part 2, 2011; The Guardian, Flora and Fauna International, WWF, press reviews; personal communication with Dr. Daniel Stiles.

SMUGGLING METHODS AND ROUTES

The selection of routes and *modus operandi* of smugglers are based on an assessment of three factors:

- The probability and size of profit to be made;
- The probability of getting caught; and
- The probability of evading compromise, capture, trial, fines or imprisonment.

In other words, how much money can be made, what is the risk, and what are the options if caught. An assessment of these factors can sometimes allow the law enforcement officer, the experienced intelligence analyst and the investigator to predict the actions of smugglers.

In principle, wildlife smuggling is done in the following ways:

- Transport over land by foot, horse, donkey, motorbike and other vehicles;
- Transport by river by boats;
- Transport by sea by vessels;
- Transport by air from fields or airstrips, including helicopters, small fixed-wing bush planes and larger transport airplanes; and
- Transport by individuals in luggage or through diplomatic posts.

In some instances, wildlife products are smuggled using combinations of these options. However, smuggling live animals is very different from smuggling wildlife products such as ivory or rhino horn. Great apes are large and smuggling them requires a great deal of planning and logistics. Unfortunately, most of the apes that are successfully intercepted and seized are infants that amateurs are attempting to smuggle in luggage or similar containers in the hopes of making a large profit. Such smuggling methods often lead to the death of the ape.

Organized live ape smugglers prefer to transport apes by cargo airplane directly to the destination country utilizing small local air strips.

Organized traffickers seeking high profits minimize the number of cargo transfers along the smuggling route, as each handling increases the ape's stress levels. A fixed feeding setup also helps to minimize stress and reduces the risk of exposure to disease. Most important, traffickers aim to minimize the time that the ape spends in transit. This is not so much due to risk of compromise, as would be the case with other forms of smuggling, as it is to ensure the survival of the smuggled ape.

For this reason organized live ape smugglers prefer to transport apes by cargo airplane directly to the destination country utilizing small local air strips. Due to the increase in infrastructure development and resource extraction projects in ape range areas, significant numbers of cargo planes associated with these projects are able to leave from small air strips near or on-site and travel directly to the Gulf, the Middle East and Southeast Asia virtually uninspected. Widespread local corruption makes the bribing or threatening of local customs officers possible and such incidents have been reported by criminal intelligence, as well as by the media.

Apes may also be transported by ships and large boats, as the vessels often go uninspected and cages with food and water are easily accommodated. Such vessels may visit small ports or improvise landings in West Africa and Southeast Asia. On board, the great apes will remain in the same cage for a long period of time, thereby reducing stress levels. As of yet, there is little documentation of this mode of transportation in the modern trafficking of great apes. However it was the primary method of transporting live wildlife for centuries.

Transporting apes in trucks over long distances is risky, not only because border crossings and vehicle check-points increase the risk of interception, seizure and arrest, but also because they increase the risk that the ape will suffer from dehydration and stress. Although some such cases have been intercepted and reported, it is unclear what proportion of trade they represent. This is also true of the smuggling of infant apes in luggage on commercial flights. Often these are the methods used by amateur smugglers, operating in the low-profit end of the trafficking chain.

DISEASE THREATS AND ILLEGAL TRADE

The close phylogenetic relationship between humans and great apes means that there is a very high risk of pathogen exchange. The emergence among humans of diseases carried by great apes has been an unintentional effect of the hunting and butchering of the African great apes. Pathogen exchange has resulted in outbreaks of some of the most lethal diseases among humans, including the Ebola virus and HIV/AIDS (Bailes *et al.* 2003). Transmission of various other retroviruses has been demonstrated and it is likely that through bushmeat hunting and butchering other pathogens are being exchanged between humans and apes, however systematic investigations have not been carried out.



Bushmeat hunters are at the highest risk during the butchering process, as they come in contact with the blood and organs of freshly killed great apes (Wolfe *et al.* 2005). Hunters themselves frequently have lesions caused by their work in the forest and the handling of machetes, leading to blood-on-blood contact between humans and great apes. Transmission of pathogens from processed (smoked or cooked) meat is also possible but depends largely on the stability of the pathogen. Anthrax spores, for example, are extremely stable pathogens and have been known to infect African great apes in the wild (Leendertz *et al.* 2006). Given the tremendous costs associated with zoonotic diseases such as HIV/AIDS in humans, limiting bushmeat consumption is an extremely cost-effective means of combating such diseases, contributing to both the protection of great apes and the prevention of diseases in humans.

Pathogen transfer goes both ways and bushmeat hunting presents another, albeit less obvious, threat to wild great ape populations. Infant or juvenile great apes captured during the bushmeat hunt are illegally sold as pets, resulting in human exposure to the pathogens carried by the apes, and ape exposure to the pathogens carried by humans (Schaumburg *et al.* 2012; Unwin *et al.* 2012). These pathogens may cause acute disease in the great apes, and while some may be treated, others may persist over many years.

Once captured, the best scenario for the individual great ape is to be confiscated at some point along the trade chain and housed in a great ape sanctuary. Here, the animals obtain veterinary care and are housed in social groups. However, many sanctuaries are engaged in reintroduction programmes in accordance with international regulations that will return a portion of these great apes to the wild. Such programmes are difficult and much-debated (Beck *et al.* 2007). If confiscated apes are released in areas already home to wild apes of the same species and disease screening is inadequate, human pathogens may be introduced into the wild populations. The risk of pathogen transfer creates new challenges for reintroduction programmes and will lead to the exclusion of entire groups of captive apes from such programmes.

IMPACT OF ILLEGAL TRADE

The impact of the illegal trade of great apes is measured in three ways: using data, creating estimates and making extrapolations.

DATA

In gauging the recent loss of wild great apes to trafficking (between 2005 and 2011), a variety of sources were consulted to tabulate all documented cases.¹ The record is far from complete, but the table below presents a summary of what could be confirmed.

Documented number of great apes trafficked from the wild, 2005–2011²			
	Live	Dead*	Total
Chimpanzee	614	>29	>643
Bonobo	>48	Many	>48
Gorilla	78	15–20	93–98
Orangutan	1,016	3	1,019
Total	>1,755	>50	>1,808

* Great ape skulls, hands, meat and other body parts are often confiscated as part of the illegal trade, and can be counted as an ape lost to the illicit trade.

The numbers in the above table are documented, though many sources refer to instances of unknown numbers of great apes killed by hunting and taken from the wild for trade (see Nellemann *et al.* 2007, 2010; Nijman 2005a, 2005b, 2009; Campbell *et al.* 2012; Caldecott and Miles 2005). It is likely that these numbers are in

1. Sources used in the survey include: GRASP database of great ape arrivals in sanctuaries, the UNEP-WCMC CITES Trade Database (www.unepwcmc.org), TRAFFIC seizures (www.traffic.org/bulletin), great ape zoo studbooks including Carlsen 2009; Ross 2009; Pereboom *et al.* 2011; Wilms and Bender 2011; and Elder 2011, CITES Standing Committee and Conference of the Parties reports (www.cites.org), NGO websites, and various reports including from media.

2. Reported cases sometimes did not give precise numbers, but rather presented qualitative terms such as ‘a few’, or gave a range of specimen numbers. These inexact quantities are reflected in the table as the ‘more than’ (>) symbol or a qualitative term.

fact a gross underestimation of the real impact of the illegal trade. In order to monitor and assess trends in capture and mortality rates of great apes due to trade-related activities, governments, international organizations such as GRASP, TRAFFIC and CITES, and NGOs should collaborate in documenting all known cases.

The table below shows the numbers and percentages of known cases of domestic trade in live great apes as well as the known cases of apes that left their country of origin.

Number and percentage of live great apes trafficked locally or internationally, 2005–2011		
	National	International
Chimpanzee	301 (50%)	307 (50%)
Bonobo	43 (~90%)	5 (10%)
Gorilla	53 (69%)	24 (31%)
Orangutan	864 (85%)	149 (15%)
Total	1,261 (72%)	485 (28%)

The majority of national cases involve the rescue of captured great apes, which are then sent to accredited sanctuaries or local zoos in Africa or Asia, where they receive permanent care. The international cases are seizures of illegally trafficked great apes that were either repatriated or sent to other sanctuaries.

It is estimated that anywhere from one to fifteen great apes die for each live specimen in the illegal trade, depending upon the species (Nijman 2009; Nellemann *et al.* 2010). It should also be noted that live trafficked numbers are almost always taken from confiscations or arrivals at sanctuaries and rehabilitation centres. The majority of trafficked apes reach their destination undetected. Some individual apes that enter the live trade die en route or soon after arrival at their destination, particularly young gorillas (Nellemann *et al.* 2010). For example, of the estimated 100 or more great apes languishing in private collections and tourist facilities in Egypt in 2008, up to 1,000 likely died en route (Landais 2008).

ESTIMATES

The illegal hunting and trafficking of great apes exacts a massive toll on wild populations and the number of chimpanzees, gorillas, bonobos and orangutans that are confiscated only hints at the losses. In addition to great apes killed



Gorilla: 1 confiscated = 2 dead adults

Gorilla mortality rates caused by the illegal trade are likely much higher than other great apes, specifically because infant gorillas succumb easily to stress and illness and often die during trafficking. In fact, a gorilla sanctuary in Congo in the 1980s reported that 80 per cent of rescued infants died in captivity, suggesting that four infants died for every one infant that lived. Each of those dead infants signified two further deaths during capture, those of the parents. Thus, each infant rescued alive may represent a potential loss of 15 wild gorillas.



Chimpanzee: 1 confiscated = 5–10 dead adults

The social structure and size of chimpanzee communities often results in the hunters killing entire families for bushmeat in the process of retrieving a single infant. A review of the capture practices of wildlife traders in West Africa in the 1970s estimated that for every live captive infant chimpanzee rescued, five to 10 chimpanzees were killed (Teleki 1980).

during the actual hunt, others die as a result of injuries, illness or mistreatment while in captivity. Additionally, only a small percentage of those sold on the black market are ever rescued and even the most conservative estimates indicate that wild populations suffer serious losses, varying according to the species.



Orangutan: 1 confiscated = 1 dead adult

The solitary nature of orangutans limits the immediate loss of life to the mother of each confiscated infant, although some studies suggest that six to eight die in captivity for every one that survives. But orangutans reproduce slowly with only one birth every six to eight years, and many wild populations exist in isolated fragmented forests. A study of the wild orangutan population in Kalimantan, Borneo, found that even the loss of a mother during capture accounted for 3 to 4 per cent of the total number of reproductive females in the region, threatening to bring the wild population into a negative spiral.



Bonobo: 1 confiscated = 5–10 dead adults

Bonobo family groups are increasingly accessible to hunters searching for bushmeat. Wild bonobo populations follow many of the same social community patterns as chimpanzees, and are easy targets for hunters in search of food or infants to sell. No more than 20,000 bonobos are thought to exist and they are only found in dwindling numbers in forest pockets of DR Congo. Intense hunting could drive the bonobo to extinction.

EXTRAPOLATIONS

Because the existing data is so limited, it is impossible to accurately gauge the true impact of the illegal trade of great apes. However, even a conservative estimate based on existing knowledge suggests that large numbers of wild apes die each year.

Population-loss estimates require two assumptions: 1) an undetermined number of great apes die as a result of poaching and trafficking; and 2) only a fraction of the great apes illegally traded

are ever confiscated. Law enforcement experts estimate that no more than 10 per cent of all contraband is seized, however even an estimated scenario where 50 per cent of all trafficked great apes are confiscated yields troubling numbers.

Between 2005 and 2011, an average of 2,021 chimpanzees, 150 bonobos, 420 gorillas, and 528 orangutans were lost each year. This means that during that period, a total average of 3,174 great apes disappeared each year from the forests of Africa and Asia through illegal hunting and trade.

Number of great apes counted, presumed dead and lost, 2005–2011

	Confiscated/Confirmed	Presumed Dead	Undetected Losses (x2)	Total Lost
Chimpanzee	643	6,430	7,073	14,146
Bonobo	48	480	528	1,056
Gorilla	98	1,372	1,470	2,940
Orangutan	1,019	1,019	2,038	4,076
Total	1,808	9,301	11,109	22,218



TYPES OF TRAFFICKING

SMALL SCALE

In great ape habitat areas and nearby cities, it is not uncommon to find chimpanzees or orangutans being openly carried by people on the roads in or outside of town. A potential buyer who goes into a restaurant or bar and asks where one might purchase a great ape often gets a standard response: “Come back tomorrow, I will find you one.” There is a regular movement of captured great apes moving by road, rail, boat or plane from rural to urban areas. This small-scale traffic is a steady threat to wild great ape populations and provides opportunities for larger scale illegal trade.

LARGE SCALE

Large-scale traffickers are involved in the international trade of live great apes and acquire great ape specimens from local, small-scale traffickers. Their operations are based near an international airport or shipping port, close to great ape habitats. They are able to entice airline or shipping personnel into complicity and often interact with corrupt national CITES and/or customs officials and police officers at both the export and import stage of trafficking. Based on what is known from confiscation cases, large-scale traffickers ship two to six apes at a time. Because they operate over relatively long periods of time, each large-scale trafficker deals with large cumulative numbers of great apes and benefit considerably from the trafficking.

CHIMPANZEES AND GORILLAS

Cameroon, DR Congo and Guinea are the primary source countries for chimpanzees and gorillas and Kano, Nigeria, is used as a key smuggling transit point. An investigation by the World Society for the Protection of Animals (WSPA) in 1997 uncovered a well-established smuggling route for West African CITES-listed species (primarily from Cameroon and Nigeria) via Sudan and out of Africa through Egypt to the Middle East and Asia. The investigator was told that traffickers in Kano, Ni-

geria, were exporting about 40 chimpanzees and eight gorillas each year, and that this type of trade had been going on for a very long time (New York Times 1997; Raufu 1999). Cairo is both a destination city and a trafficking hub for shipment to other Middle East countries and China. It is quite possible that Gabon, Congo and other African countries also contribute to the flow of great apes to Kano.

For many years Guinea has served as a source of trafficked chimpanzees. Since 2010, gorillas, which are not native to Guinea, have also been exported. China is the main destination country. Between 2007 and 2012, Chinese mine workers in Guinea, in collusion with the CITES management authority in Conakry, exported over 130 chimpanzees and 10 gorillas to China (Johnson 2012; Ammann 2012). In 2012, LAGA reported the implication and arrest of Chinese involved in great ape trafficking in Guinea, noting that CITES documents had been falsified to indicate that the chimpanzees and gorillas had been bred in captivity. In reality, the gorillas probably originated in DR Congo (LAGA/WCP 2012; Ammann, *in litt.* 2012b).

Smuggling route from Nigeria to Egypt

In 1994, a chimpanzee was seized in Cairo, Egypt on an inbound flight from Kano, Nigeria. A woman who was described as Nigerian claimed ownership of the chimpanzee, and attempted unsuccessfully to use her diplomatic influence to have the chimpanzee released (CITES 1994).

NGO investigations later uncovered that the woman, who had dual Nigerian and Egyptian citizenship, regularly trafficked chimpanzees and gorillas and that she had likely moved hundreds of great apes through Kano to Cairo over a 20-year period (Ammann 2011, 2012). The woman's husband owned a transport company with offices in Egypt, Nigeria and Cameroon, and the couple had connections with powerful people in each of those countries (Bharadwaj 2006).



ORANGUTANS

Thailand, Malaysia, Singapore and Taiwan have been identified as important destination countries for orangutans (Caldecott and Miles 2005; CITES/GRASP 2006; Nijman 2005a, 2005b, 2009). Sold to crews of fishing boats or freighters, orangutans are taken by boat from the interior to port towns and cities along the coasts of Borneo and Sumatra. These vessels transport the apes to Jakarta or Singapore, where some are transported by air to Thailand, Taiwan and other destinations.

In 2004, 115 orangutans were found at an amusement park in Bangkok, and it is believed they were smuggled directly out of Borneo or Sumatra (Nijman 2005b). In 2006, CITES/GRASP reported that a Dutch man had taken 40 orangutans from Jakarta to Europe and it has been estimated that each week, two infant orangutans are smuggled from Kalimantan via Jakarta and Batam Island to Singapore (Caldecott and Miles 2005). Amuse-

ment parks in Thailand, Cambodia and Malaysia commonly display trained orangutans and large numbers have been seized and repatriated to Indonesia, where they end up in rehabilitation centres (CITES/GRASP 2006; Nellemann *et al.* 2007).

BONOBOS

No cases of large-scale bonobo trafficking have been documented, although bonobos have been seen in several of the newer facilities and are almost certainly illegally trafficked. During the civil war in DR Congo in the late 1990s, 12 bonobos were seen for sale in the Kinshasa market over a five-month period (Caldecott and Miles 2005). Once peace was restored in the bonobo habitat area, bushmeat hunting and the occasional live-capture became more commonplace, threatening the bonobo's survival. There are, however, still in areas in DR Congo where the local inhabitants have a taboo against eating bonobo meat (Liengola *et al.* 2009; Maisels *et al.* 2009, 2010b).

LIVE GREAT APE MARKETS

NATIONAL TRADE

Pets

In the great ape range states of West and Central Africa and Southeast Asia, what is broadly called the “pet trade” is the most common type of live trade. In Africa, young great apes are often bought from traffickers by expatriate residents in order to rescue them from being eaten or abused, or are purchased by Africans as household pets. In Borneo and Sumatra, however, a young or orphaned infant orangutan is more frequently captured and kept by a hunter, or sold to another local person, often a government official, military personnel or businessman. Although it is illegal, orangutans are kept for amusement or as a sign of prestige. Kept orangutans are often sold later on to make money (Caldecott and Miles 2005; Nijman 2005a, 2005b; Nellemann *et al.* 2007).

Entertainment

Apes are not normally traded for entertainment purposes in African range states, but in Southeast Asia there are recorded cases of orangutans used in clumsy boxing matches in Thailand and Cambodia or multi-species animal shows in Malaysia. Some zoos offer breakfast or lunch with an orangutan and there are known cases of orangutans being used as prostitutes in Kalimantan (CITES/GRASP 2006).

Apes as photo-props

Wherever tourists gather, photographers will offer to take photos of people, often using a wild animal in the tourist's arms to make it more interesting. Primates and big cat cubs are favored props for such photos, and the animals are often drugged and have had their canine teeth removed in order to minimize the risk of injury to humans.

INTERNATIONAL TRADE

Pet collectors

Many wealthy people in different parts of the world, ranging from drug lords and dictators to business magnates, share an urge to flaunt their riches by displaying exotic animals for personal pleasure and to impress their friends. In some cultures where gifts are an important part of currying favor or winning business deals with such wealthy, powerful people, great apes may be presented as a gift. Whether collectors or gift-givers, these people are willing to pay large sums of money to acquire great apes.

Breeding centres

Smuggling apes and rearing them to sexual maturity to use them in breeding is becoming a big business. The offspring are often sold to private collectors, disreputable zoos, and safari parks. Such breeding centres have been uncovered in Egypt and Thailand, among other places.

Zoos

Zoo associations such as the World Association of Zoos and Aquariums, the Association of Zoos and Aquariums, the European Association of Zoos and Aquaria, and the Pan African Association of Zoos, Aquaria and Botanical Gardens have adopted policies that prohibit the use of great apes in performance exhibitions or other types of commercial activities. Members are also no longer permitted to acquire great apes imported directly from the wild and have initiated breeding programmes in coordination with conservation specialists to prevent the hybridization of different subspecies and maintain captive populations.

Unfortunately, private and public zoos that are not members of these associations and a few association members that contravene the rules, do import great apes illegally. Some of these are known to exploit apes commercially by arranging photograph sessions and having the apes perform and other unethical actions.



Apes as pets on merchant ships

There is a long tradition of sailors keeping wild animals such as parrots and monkeys as pets onboard ships. To investigate whether this practice continues and whether it involves great apes, an informal investigation was undertaken February, 2013, in Boma, a container port at the mouth of the Congo River in DR Congo. Here, cargo ships are usually anchored off-shore, waiting their turn to unload and load, but crew members rarely come ashore into town as they do not have visas. If they want to purchase anything, intermediaries known as ‘washmen’ are used. The washmen visit the ships by canoe, take orders and deliver goods.

During the informal investigation, the washmen stated that they could procure a wide variety of wild animals. When asked if they had ever provided baby apes, two young men said they hadn’t but they knew where they could get a baby “gorilla.” The washmen took a moment to confirm the animal was still available before leading the investigators to a small wooden shop selling hair extensions. The proprietress offered to show the “chimpanzee” in her possession, which she had acquired as a pet for her children, but was prepared to sell for USD 450.

The ape turned out to be a young female bonobo that the family had named “Mireille.” The infant appeared malnourished but otherwise well treated, living free in the family home, wearing a nappy and sleeping in the same bed as the woman’s two daughters. When asked if the children would be sad at the loss of their pet, the mother replied, “No problem, I can easily get another from a lady in Matadi.”

The next day, officials from the local environment ministry office formally confiscated the bonobo and it was taken by road to Lola ya Bonobo in Kinshasa, the only sanctuary for the species which is native to DR Congo.

Amusement parks

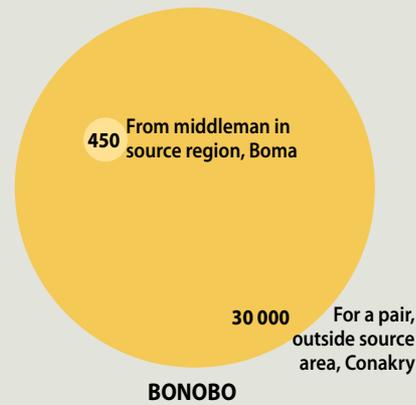
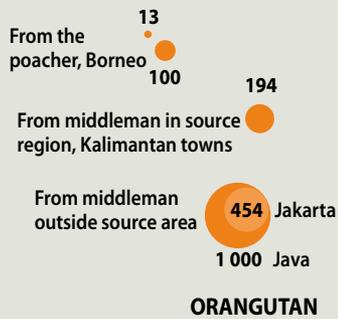
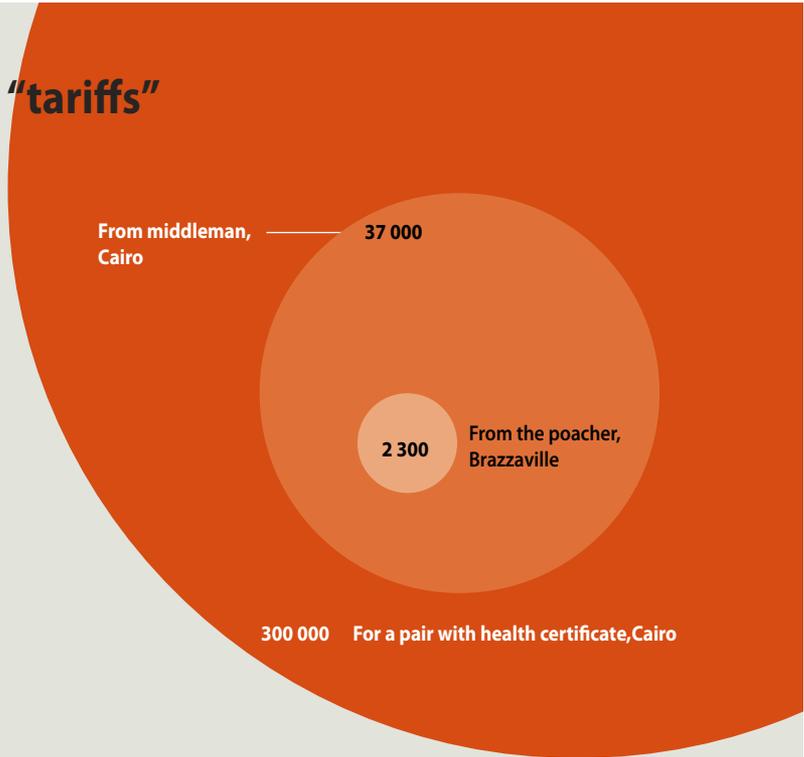
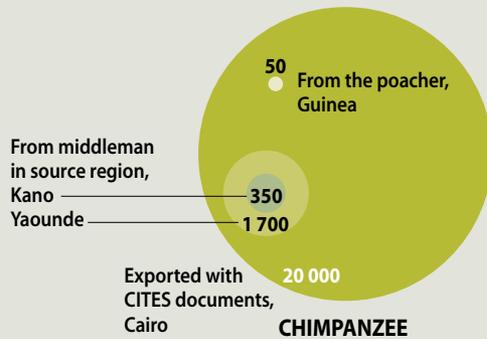
Although illegal in most countries that adhere to the CITES Convention, great apes are known to have been imported for use as attractions in amusement parks, sometimes using incorrect CITES source and/or purpose codes to make it seem that they are captive-bred or are to be used for educational or scientific purposes. In some places in eastern Asia, purported zoos look very similar to amusement parks and it is difficult to distinguish between the two.

Travelling circuses

Wild great apes, usually young orphans, are smuggled from range states to many parts of the world for use in travelling circuses. Travelling circuses operating in range states and their neighboring countries are known to have purchased great apes locally and to have flouted CITES regulations and national laws by transporting these apes across international borders (CITES 1992, 1994).

Great ape illegal trafficking “tariffs”

US Dollars



Note: Prices for live great apes vary greatly according to where they are sold, initial cost to the seller, risk factors and bribes in shipping, the estimated economic status of the buyer and demand factors. The price data is incomplete.

Sources: Caldecott and Miles, 2005; Bharadwaj, 2006; Maxmen, 2012; LAGA/WCP, 2012; Nijman, 2005a&b; CITES/GRASP, 2006; Redmond, 1989 and personal communication 2013; Tanna, 2012; Ammann, 2011, 2012 and personal communication, 2013.

GREAT APE SANCTUARIES

Sanctuaries and rehabilitation centres across Africa and Asia play a vital role in the battle against the illegal trade in great apes. These facilities work closely with law enforcement officials and provide permanent care to the apes that are confiscated from illegal traders.

The high rate at which great apes arrive at sanctuaries and rehabilitation centres indicates that the illegal trade continues to thrive. Some sanctuaries have kept the confiscated apes as evidence in smuggling court cases, or have provided expert testimony. This has helped the police officers, customs officials and wildlife authorities pursuing the prosecution of traffickers.

In Africa, the Pan African Sanctuary Alliance (PASA) is comprised of 22 member facilities in 12 countries that collectively care for over 1,150 chimpanzees, gorillas, and bonobos rescued from illegal trade. Although some of the sanctuaries were established more than 40 years ago, most were created as a result of the bushmeat crisis and black market trade that flourished in the 1990s.

A 2007 survey found that between 2000 and 2006, an average of 57 chimpanzees arrived at PASA member sanctuaries each year and most of these were wild-born and had been acquired through confiscation (Faust *et al.* 2011). Four of the PASA sanctuaries individually care for more than 100 chimpanzees, and all are near or at carrying capacity and struggle with the steep costs associated with great ape care. Many also exist in regions of Africa torn by political instability and civil strife. A sanctuary in Sierra Leone was a major battle ground between government forces and rebel armies during the civil war (1991–2002), and bullet holes are still evident in the sanctuary buildings. Amazingly, no chimpanzees or staff members were injured during the fighting. PASA sanctuaries in Congo, DR Congo, and Guinea have also weathered years of war and civil unrest.

PASA sanctuaries do not permit breeding and new apes are added primarily through confiscation of wild-born individuals. Approximately half of the PASA sanctuaries are committed to reintroduction programmes in accordance with IUCN guidelines (Beck *et al.* 2007). More than 100 chimpanzees (Guinea, Congo), gorillas (Congo, Gabon) and bonobos (DR Congo) have

already been returned successfully to the wild. However, reintroduction is a complex, expensive and highly difficult process. No more than a fraction of the great apes in sanctuaries can ever return to the forests, and reintroduction is a complement – rather than an alternative – to traditional conservation.

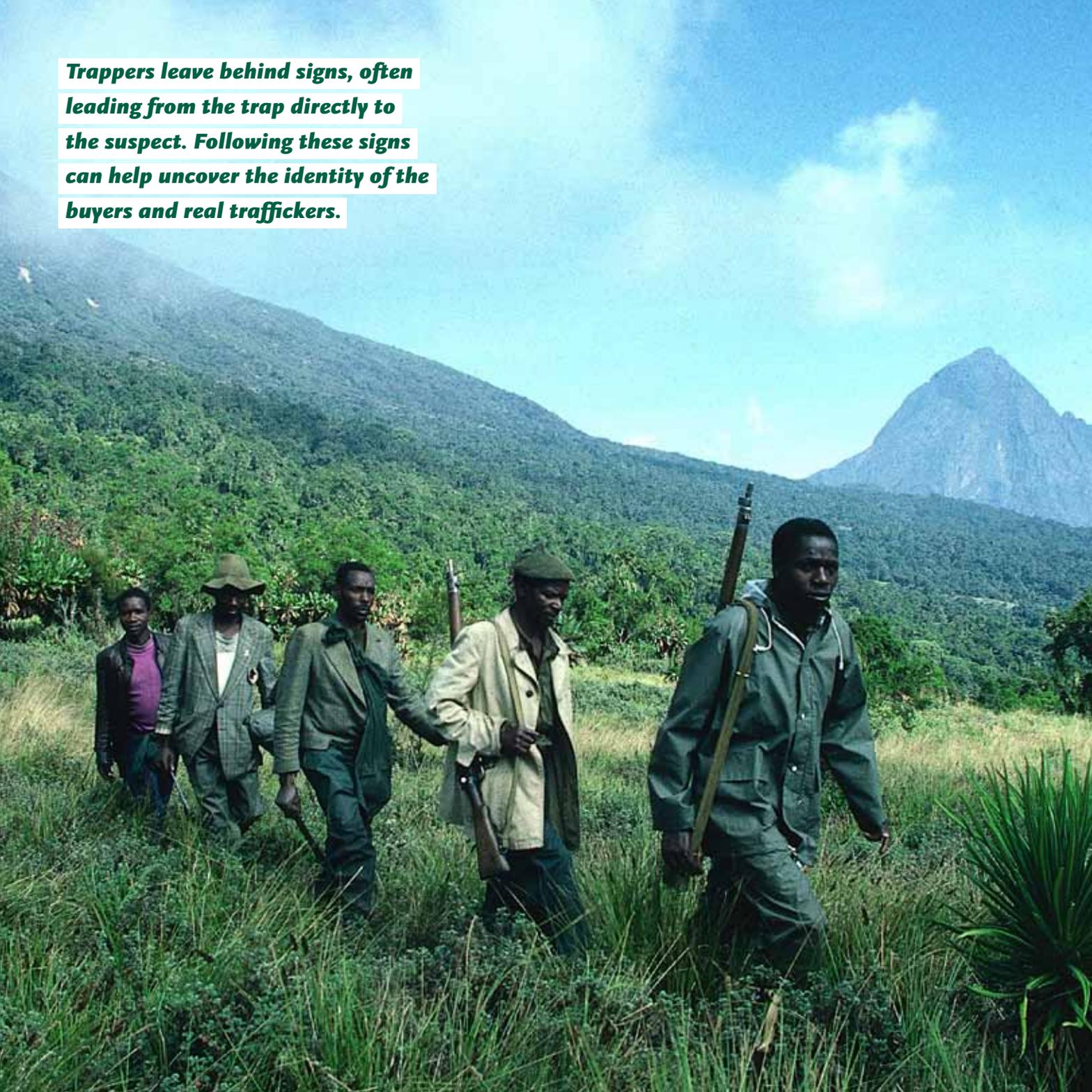
Non-PASA sanctuaries in Africa also care for a considerable proportion of the population of confiscated great apes, including two recently established gorilla facilities in eastern DR Congo: GRACE (home to Eastern Lowland gorillas) and Senkwekwe (home to Mountain gorillas). In all, an estimated 120 great apes reside in these sites in Gabon, Cameroon, DR Congo and Liberia.

The high rate at which great apes arrive at sanctuaries and rehabilitation centres indicates that the illegal trade continues to thrive.

Zoos double as confiscation centres in many African countries where no sanctuary exists, and an estimated 60 great apes can be found in cities such as Abidjan, Kinshasa, Brazzaville, Port Gentil, and Kumasi. The level of care in these facilities is sub-standard however, and mortality rates are high.

In Southeast Asia, five rehabilitation centres provide the primary captive care options and law enforcement support for confiscated orangutans. These centres collectively host more than 1,300 orangutans, led by the Nyaru Menteng Orangutan Centre in Borneo, which cares for over 600 orangutans on a daily basis. These centres struggle to keep pace with the agro-industrial expansion and deforestation that fuels the illegal trade in wildlife. As in Africa, the rehabilitation centres in Borneo and Sumatra focus increasingly on reintroduction as a means of placing emphasis on forest protection. In 2007, the Government of Indonesia formulated a plan that called for the closure of all rehabilitation centres by 2015, thereby accelerating the pace of orangutan release and reintroduction. At present, an estimated 2,000 orangutans have been released back into the wild.

Trappers leave behind signs, often leading from the trap directly to the suspect. Following these signs can help uncover the identity of the buyers and real traffickers.



CONCLUSION: PROTECTING GREAT APES – CHALLENGES AND OPPORTUNITIES

Unless the ban on illegal trade of wildlife is enforced according to the CITES Convention, it is likely to continue unchecked. Indeed, action is required by CITES, the Parties to the Convention, the national and international law enforcement community, as well as national prosecutors if wildlife trafficking is to be tackled effectively. Currently, seizures are predominantly made at customs check points or when arranged by NGOs, and because enforcement mechanisms are not in place anywhere else along the trade chain, these seizures have proven to be ineffective in combating the trade.

ENFORCEMENT ON THE GROUND

Generally speaking, apes are captured in traps, through the use of drugged darts, poisoned bait, or traditional hunting methods. Apes are also captured while they raid crops, and infants are sometimes captured by hunters looking for bushmeat. Because these activities are so dispersed, patrols intending to encounter and arrest poachers are unlikely to be successful, although they can act as monitoring of the activities that threaten great apes, such as logging, mining, and the setting of fires and traps.

There are however traditional anti-poaching tactics that can be applied. When trappers carry out reconnaissance, set or check traps, and transport the live apes, they tend to leave behind trail signs, often leading from the trap directly to the suspect. Following these signs can help to uncover the identity of the buyers and traffickers, either through police questioning or, more effectively, through surveillance.

It is also important for law enforcement efforts to focus on the sale of apes in markets, streets, on the Internet, or through organized wildlife traffickers.

CUSTOMS AND ANTI-SMUGGLING

As the transportation of live wildlife is far more complex than the smuggling of drugs, ivory or rhino horn, the chances of interception are much higher. The most appropriate option is for national customs authorities to establish special anti-smuggling units that work in cooperation with criminal intelligence units, to investigate all forms of contraband by inspecting non-commercial flights from smaller airstrips that are not subject to regular inspections. Similar units should be tasked with monitoring road traffic and river traffic, and to regularly inspect boats and vessels at major ports.

ORGANIZED CRIME AND INVESTIGATION

Because wildlife trafficking is a trans-boundary issue, a coherent international effort is needed in order to effectively address it. The ICCWC was launched in 2010 to meet this demand, and began by focusing on the illegal tiger trade (*see page 13 for more information on the ICCWC*).

Indeed, a structure to combat illegal wildlife trade is, in principle, no different from the one needed to combat any other form



of organized crime. Trans-boundary criminal intelligence units and specialized anti-poaching units operating with law enforcement agencies both inside and outside parks, as well as well-established intelligence networks in communities and towns, are all critical to the successful unraveling of criminal networks.

Once traffickers are identified, surveillance and backtracking must be carried out. Many primary wildlife traffickers are known to local NGOs, and these conservation organizations should form a critical component of the networks assisting criminal intelligence units. With local intelligence networks helping to produce reports on trafficking activities, the necessary information can be collected in order to initiate police investigations, involve INTERPOL, and establish formal cooperation among the countries involved. Here again, the ICCWC can play a key role by supporting the entire enforcement chain: intelligence units, police and customs officials, and the judiciary, and to identify and close down foreign markets that drive the demand.

PROSECUTION

The existing weaknesses in the prosecution process in Africa and Southeast Asia compound the lack of law enforcement and trafficking investigations in those regions, making it difficult to put an end in the illegal trade of great apes. Transporting these animals, although a clear violation of national laws and CITES, and in spite of the fact that such transport usually involves criminal networks operating across national borders, is generally not considered to be an “organized crime” in many countries unless it involves the violation of laws that carry a sentence of at least four years. This is important. If the trans-boundary trafficking of great apes and other contraband carries deterrent sentences four years or more, it will be considered organized crime. This will lead to far more stringent investigations and subsequently the prosecution and conviction of the individuals involved.

The ICCWC has worked to develop a tool kit that will assist both police officers and investigators in identifying which laws have been violated, as well as how and where evidence can be located to ensure that proper investigation is carried out and that those involved in trafficking are prosecuted. Without suitable legal deterrents, the trafficking of great apes will continue and their numbers will continue to drop.

RECOMMENDATIONS

Organized trafficking

- Investigate international great ape traffickers and buyers for complicity in trans-boundary organized crime.
- Prosecute those accused of participating in the organized trans-boundary crime of great ape trade to the fullest extent of the law.
- Designate national customs units to specifically address environmental crime and carry out inspections targeting the live trade of great apes and other wildlife at airports (both regional and international), ports, and major roadways.
- Emphasize inspections for illegal trade exports and imports.
- Establish trans-national criminal intelligence units targeting environmental crime to ensure that intelligence is compiled, analyzed and shared with national police forces, customs and INTERPOL.
- Improve the training of police officers, customs officials, and the judiciary on the issues of illicit trade in great apes, environmental crime and wildlife trafficking.
- Increase enforcement of protected areas, to both reduce illegal trade in great apes and to protect their habitat.

Law enforcement

- Establish an electronic database that includes the numbers, trends and tendencies of the illegal great ape trade, and monitor arrests, prosecutions and convictions as a means of assessing national commitment.
- Create law enforcement indicators that can accurately gauge national commitment.
- Review national laws and penalties relating to the killing and trafficking of great apes and support efforts to forcefully implement and strengthen those laws.
- Incorporate anti-corruption measures into law enforcement efforts to protect great apes, and urge governments to report annually on efforts to counter corruption.
- Introduce both revised CITES permits and revised reporting systems that minimize forgery and falsification.

Consumer demand

- DNA-test all confiscated great apes and return to country of origin – if discernible – within 8 weeks of confiscation.
- Utilize national and international multimedia campaigns to eliminate the trade/ownership/use of great apes and emphasize laws and deterrent punishment.
- Require CITES authorities to control the exploitation of illegally trafficked great apes in entertainment facilities and zoos.
- Support efforts to end the use of trained great apes in films, television shows or advertising.

ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
A.P.E.S	Ape Populations, Environments and Surveys
AZA	The Association of Zoos and Aquariums
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
EAZA	European Association of Zoos and Aquaria
GAPIN	Great Ape Integrity Programme
GLOBIO	Global Methodology for Mapping Human Impacts on the Biosphere
GRACE	Gorilla Rehabilitation and Conservation Education
GRASP	Great Apes Survival Partnership
HIV	Human immunodeficiency virus
ICCWC	International Consortium on Combating Wildlife Crime
INTERPOL	International Criminal Police Organization
IUCN	International Union for Conservation of Nature
LAGA	Last Great Ape Organization
NGO	Non Governmental Organization
PAAZAB	Pan African Association of Zoos, Aquariums and Botanical Gardens
PALF	Project for the Application of the Law for Fauna
PASA	Pan African Sanctuary Alliance
RRA	Rapid Response Assessment
SRES	Special Report on Emissions Scenarios
SSC	Species Survival Commission
TRAFFIC	Wildlife Trade Monitoring Network
UN	United Nations
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNODC	United Nations Office on Drugs and Crime
USD	United States Dollar
WAZA	World Association of Zoos and Aquariums
WCMC	World Conservation Monitoring Centre
WCO	World Customs Organization
WSPA	World Society for the Protection of Animals
WWF	World Wide Fund for Nature

CONTRIBUTORS AND REVIEWERS

EDITORS

Daniel Stiles
Ian Redmond
Doug Cress
Christian Nellemann
Rannveig Knutsdatter Formo

CARTOGRAPHY

Riccardo Pravettoni

LAYOUT

GRID-Arendal

COPY EDITING

Margaret Crump
Janet Fernandez Skaalvik

CONTRIBUTORS, ADVISORS AND REVIEWERS

Edith Albert	Kim Maciej
Karl Ammann	Luc Mathot
Claudine André	Erik Meijaard
Neville Ash	Martin Mulama
Sri Suci Utami Atmoko	Bernardas Padegimas
Franck and Roxanne Chantereau	Zjef Pereboom
Ofir Drori	Johannes Refisch
Megan Elder	Martha Robbins
Neba Funwi-Gabga	Anne Russon
Naftali Honig	John VandeBerg
Tatyana Humle	Stephen van der Spuy
Noelle Kumpel	Serge Wich
Fabian Leendertz	Chris Zachrisson

INSTITUTIONS

Arcus Foundation
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PHOTO CREDITS

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REFERENCES

- Alkemade, R., van Oorschot, M., Miles, L., Nellemann, C., Bakkenes, M. and Brink, B. (2009). GLOBIO3: A Framework to Investigate Options for Reducing Global Terrestrial Biodiversity Loss. *Ecosystems*, 12, pp. 374-390
- Altevogt, B.M., Pankevich, D.E., Shelton-Davonport, M.K. and Kahn, J.P. (2011). *Chimpanzees in Biomedical and Behavioral Research: Assessing the Necessity*. Institute of Medicine and National Research Council of the National Academies. The National Academies Press: Washington DC, USA.
- Ammann, K. (2011). The Cairo Connection, Part II – Ape Trafficking: CITES Enforcement Missions – part of the solution or part of the problem? *Pax Animalis*.
- Ammann, K. (2012). The Cairo Connection, Part III: Update on pe trafficking in and out of Egypt and the Guinea ape saga. *Pax Animalis*.
- Ammann, K. (2012a). Personal communication in litt. to Daniel Stiles, December 2012.
- Ammann, K. (2012b). Personal communication in litt. August 2012.
- (1997). 'Unrelenting Contraband In Nigeria: Animals.' *New York Times* online, 17 August.
- A.P.E.S Portal (2013). Ape Populations Environments Surveys (A.P.E.S.) Portal. IUCN/SSC. Accessible online on: <http://apesportal.eva.mpg.de>
- Bailes, E., Gao, F., Bibollet-Ruche F., Courgnaud, V., Peeters, M., Marx, P.A., Hahn, B.H. and Sharp, P.M. (2003). Hybrid Origin of SIV in Chimpanzees. *Science*, 300:5626, pp.1713.
- Beck, B., Walkup, K., Rodrigues, M., Unwin, S., Travis, D. and Stoinski, T. (2007). *Best Practice Guidelines for the Reintroduction of Great Apes*. SSC Primate Specialist Group of the World Conservation Union. Gland, Switzerland.
- Benitez-Lopez, A., Alkemade, R. and Verwij, P.A. (2010). The impacts of roads and other infrastructure on mammal and bird populations: A meta-analysis. *Biological Conservation*, 143:6 pp. 1307-1316.
- Bharadwaj, V. (2006). Crimes against apes. *Gulf News* online, 16 November.
- Butynski, T.M. (2003). The robust chimpanzee *Pan troglodytes*: taxonomy, distribution, abundance and conservation status. In *Status Survey and Conservation Action Plan: West African Chimpanzees*. [Kormos, R., Boesch, C., Bakarr, M.I. and Butynski, T.M. (eds.)] IUCN: Gland, Switzerland, pp. 5-12.
- Caldecott, J. and Miles, L. (2005). *The World Atlas of Great Apes & their Conservation*. UNEP World Conservation Monitoring Centre. University of California Press: Berkeley, USA.
- Campbell, G., Junker, J., Boesch, C. and Kühl, H. (2012). *Global A.P.E.S. Status Report – for internal use only*. UNEP/UNESCO/GRASP Council. 2/7.
- Campbell-Smith, G., Simanjanrang, H.V., Leader-Williams, N. and Linkie, M. (2010). Local attitudes and perceptions towards crop-raiding by orangutans (*Pongo abelii*) and other non-human primates in northern Sumatra, Indonesia. *American Journal of Primatology*, 72:10, pp. 866-876.
- Carlsen, F. (2009). *European Studbook for the Chimpanzee (Pan troglodytes)*. Copenhagen Zoo: Frederiksberg, Denmark.
- du Chaillu, P.B. (1861). *Explorations and adventures in equatorial Africa*. Harper & Brothers: New York, USA.
- CITES (1992). *Review of Alleged Infractions and Other Problems of Enforcement of the Convention*. CoP8, Doc. 8.19(Rev.). Convention on International Trade in Endangered Species of Wild Fauna and Flora: Geneva, Switzerland.
- CITES (1994). *Review of Alleged Infractions and Other Problems of Implementation of the Convention*. CoP9, Doc. 9.22(Rev.). Convention on International Trade in Endangered Species of Wild Fauna and Flora: Geneva, Switzerland.
- CITES/GRASP (2006). *CITES/GRASP Orang-utan Technical Mission Indonesia*. 8-12 May, 2006. Convention on International Trade in Endangered Species of Wild Fauna and Flora/ Great Apes Survival Partnership.
- CITES (2013). *What is CITES?* Convention on International Trade in Endangered Species of Wild Fauna and Flora. Geneva: CITES Secretariat, available online at <http://www.cites.org/eng/disc/what.php> (accessed January 2013).
- Collodon, A.C. (1933). *Congo Jake - the story of my adventurous life*. Sampson Low, Marston & Co., London, UK.
- Denis, A. (1963). *On Safari: The Story of My Life*. Collins: London, UK.
- Dupain, J. and van Elsacker, L. (2001). Status of the proposed Lomako Forest Bonobo Reserve: a case study of the bushmeat trade. In: Galdikas, B.M.F., Briggs, N.E., Sheeran, L.K., Shapiro, G.L. and Goodall, J. (eds) *All apes great and small Volume 1, African Apes*. Kluwer Academic/Plenum Publishers, New York, USA, pp. 259-273.
- Elder, M. (2011). *International Studbook Of The Orangutan (Pongo pygmaeus, Pongo abelii)*. Saint Paul, MN, Como Zoo & Conservatory.
- Faust, L.J., Cress, D., Farmer, K., Ross, S.R. and Beck, B. (2011). Predicting Capacity Demand on African Chimpanzee Sanctuaries. *International Journal of Primatology*, 32, pp. 849-864.

- Fossey, D. (1983). *Gorillas in the Mist*. Houghton Mifflin Harcourt: New York, USA.
- Ginn, L., Robison, J., Redmond, I. and Nekaris, K. (2013). Strong evidence that West African chimpanzee is extirpated from Burkina Faso. *Oryx*, in press.
- Gray, M., McNeillage, A., Fawcett, K., Robbins, M.M., Ssebide, B., Mbula, D. and Uwingeli, P. (2006). Virunga Volcanoes Range Mountain Gorilla Census, 2003. Joint organisers' report. UWA/ORTPN/ICCN.
- Groves, C.J. (2001). *Primate Taxonomy*. Smithsonian Institution Press: Washington DC, USA.
- Hall, J.S., Saltonstall, K., Inogwabini, B.I. and Omari, I. (1998). Distribution, abundance and conservation status of Grauer's gorilla. *Oryx* 32:2, pp. 122-130.
- Hockings, K. and Humle, T. (2009). *Best Practice Guidelines for the Prevention of Conflict Between Humans and Great Apes*. IUCN/SSC Primate Specialist Group (PSG), Gland, Switzerland.
- IPCC. (2000). Summary for Policy Makers. In: *Emissions Scenarios: A Special Report of IPCC Working Group III*. [Nakicenovic, N. and Swart, R. (eds.)] Cambridge University Press.
- IUCN (2012). IUCN Red List of Threatened Species. Version 2012.2 www.iucnredlist.org.
- IUCN/ICCN (2012). *Bonobo (Pan paniscus): Conservation Strategy 2012–2022*. Gland, Switzerland, IUCN/SSC Primate Specialist Group & Institut Congolais pour la Conservation de la Nature.
- Johnson, S. (2012). Interpol demands crackdown on 'serious and organised' eco crime. *The Guardian online*, 29 March.
- Kabasawa, A. (2011). The chimpanzees of West Africa: From 'man-like beast' to 'our endangered cousin'. In: Matsuzawa, T., Humle, T. and Sugiyama, Y. (eds) *The Chimpanzees of Bossou and Nimba*. Springer-Verlag Tokyo, pp. 371-380.
- Kormos R., Boesch C., Bakarr M.I. and Butynski T.M. (eds). (2003). *Status Survey and Conservation Action Plan: West African Chimpanzees*. IUCN: Gland, Switzerland.
- LAGA/WCP (2012). *Guinea: Wildlife Law Enforcement, March-November 2012 Report*. The Last Great Ape Organization Cameroon & Wara Conservation Project.
- Landais, E. (2008). Unheeded call of Africa's apes. *Gulf News online*, 19 September, 2008.
- Leemans, R., Gaston, K.J., van Jaarsveld, A.S., Dixon, J., Harris, J. and Cheatle, M.E. (2007). International review of the GLOBIO model version 3. Netherlands Environmental Assessment Agency (MNP). Bilthoven, the Netherlands.
- Leendertz, F.H., Lankester, F., Guislain, P., Neel, C., Drori, O., Dupain, J., Speede, S., Reed, P., Wolfe, N., Loul, S., Mpoudi-Ngole, E., Peeters, M., Boesch, C., Pauli, G., Ellerbrok, H. and Leroy, E.M. (2006). Anthrax in western and Central African great apes. *American Journal of Primatology*, 68(9), 928-933.
- Liengola, I., Vosper, A., Maisels, F., Bonyenge, A. and Nkumu, P. (2009). *Conserving Bonobos in the Last Unexplored Forest of the Democratic Republic of Congo - the Tshuapa-Lomami-Lualaba Landscape*. Unpublished report, Wildlife Conservation Society: New York, USA.
- Maisels, F., Nkumu, P. and Bonyenge, A. (2009). *Salonga National Park, Democratic Republic of Congo: Terrestrial Wildlife and Human-Impact Monitoring Programme. Survey Report – Salonga Corridor*. Unpublished report, Wildlife Conservation Society: New York, USA.
- Maisels, F., Motsaba, P. and Ab'a, R. (2010a). *Great ape and human impact monitoring in the Ivindo Landscape, Gabon*. Wildlife Conservation Society: Gabon Programme.
- Maisels, F., Nkumu, P. and Bonyenge, A. (2010b). *Salonga National Park, Democratic Republic of Congo: Terrestrial Wildlife and Human-Impact Monitoring Programme. Survey Report - Eastern Sector of Park*. Unpublished report, Wildlife Conservation Society: New York, USA.
- Maxmen, A. (2012). *Chimp commodity brings the blues*. *Scientific American blogs*. November 27, 2012.
- Meijaard, E., Welsh, A., Ancrenaz, M., Wich, S., Nijman, V. and Marshall, A. (2010). Declining Orangutan Encounter Rates from Wallace to the Present Suggest the Species Was Once More Abundant. *PLoS ONE* 5:8, e12042. doi:10.1371/journal.pone.0012042.
- Meijaard, E., Buchori, D., Hadiprakoso, Y., Utami-Atmoko, S.S., Tjiu, A., Prasetyo, D., Nardiyono, Christie, L., Ancrenaz, M., Abadi, F., Antoni, I.N.G., Armayadi, D., Dinato, A., Ella, Gumelar, P., Indrawan, T.P., Kusaritano, Munajat, C., Nurcahyo, A., Priyono, C. W. P., Purwanto, Y., Sari, D.P., Putra, M.S.W., Rahmat, A., Ramadani, H., Sammy, J., Siswanto, D., Syamsuri, M., Wells, J., Wu, H. and Mengersen, K. (2011). Quantifying killing of orangutans and human-orangutan conflict in Kalimantan, Indonesia *PLoS ONE* 6:e27491

- Mittermeier, R.A., Wallis, J., Rylands, A.B., Ganzhorn, J.U., Oates, J.F., Williamson, E. A., Palacios, E., Heymann, E.W., Kierulff, M.C.M., Long Yongcheng, Supriatna, J., Roos, C., Walker, S., Cortés-Ortiz, L. and Schwitzer, C. (eds.) (2009). *Primates in Peril: The World's 25 Most Endangered Primates 2008–2010*. IUCN/SSC Primate Specialist Group, International Primatological Society, and Conservation International: Arlington, VA, USA.
- Mittermeier, R.A., Schwitzer, C., Rylands, A.B., Taylor, L.A. Chiozza, F., Williamson, E.A. and Wallis, J. (eds). (2012) *Primates in Peril: The World's 25 Most Endangered Primates 2012-2014*. IUCN/SSC Primate Specialist Group (PSG), International Primatological Society (IPS), Conservation International (CI), and Bristol Conservation and Science Foundation: Bristol, UK.
- Morgan, B., Adeleke, A., Bassey, T., Bergl, R., Dunn, A., Gadsby, E., Gonder, K., Greengrass, E., Koulagna, D.K., Mbah, G., Nicholas, A., Oates, J., Omeni, F., Saidu, Y., Sommer, V., Sunderland-Groves, J., Tiebou, J. and Williamson, L. (2011). *Regional Action Plan for the conservation of the Nigeria-Cameroon Chimpanzee (Pan troglodytes ellioti)*. IUCN/SSC Primate Specialist Group and Zoological Society of San Diego, CA, USA.
- Myers Thompson, J.A. (1997). *The History, Taxonomy and Ecology of the Bonobo (Pan paniscus Schwarz, 1929) with a First Description of a Wild Population Living in a Forest/savanna Mosaic Habitat*. Doctoral dissertation. University of Oxford: UK.
- Nellemann, C., Newton, A. (2002). *The Great Apes – the Road Ahead*. United Nations Environment Programme, UNEP-WCMC, GRASP. GRID-Arendal: Arendal, Norway.
- Nellemann, C., Vistnes, I., Jordhøy P., Strand, O. and Newton, A. (2003). *Progressive impact of piecemeal infrastructure development on wild reindeer*. *Biological Conservation*. 113:2, pp. 307-317.
- Nellemann, C., Miles, L., Kaltenborn, P. B., Virtue, M. and Ahlenius, H. (2007). *The Last Stand of the Orangutan. State of Emergency: Illegal Logging, Fire and Palm Oil in Indonesia's National Parks*. United Nations Environment Programme, GRID-Arendal: Arendal, Norway.
- Nellemann, C., Redmond, I. and Refisch, J. (2010). *The Last Stand of the Gorilla – Environmental Crime and Conflict in the Congo Basin. A Rapid Response Assessment*. United Nations Environment Programme, GRID-Arendal: Arendal, Norway.
- Nellemann, C. and INTERPOL Environmental Crime Programme (2012). *Green carbon, black trade*. United Nations Environment Programme, GRID-Arendal: Arendal, Norway.
- New York Times (1997). 'Unrelenting Contraband In Nigeria: Animals.' New York Times online, 17 August.
- Newbold, T., Scharlemann, J.P.W., Butchart, S.H.M., Sekercioglu, C.H., Alkemande R., Booth, H. and Purves, D.W. (2013). *Ecological traits affect the response of tropical forest bird species to land-use intensity*. *Proc R Soc B*, 280: 20122131.
- Nijman, V. (2005a). *Hanging in the Balance: An Assessment of Trade in Orang-utans and Gibbons in Kalimantan, Indonesia*. TRAFFIC Southeast Asia Petaling Jaya, Selangor, Malaysia.
- Nijman, V. (2005b). *In Full Swing: An Assessment of trade in Orang-utans and Gibbons on Java and Bali, Indonesia*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Nijman, V. (2009). *An Assessment of Trade in Gibbons and Orang-utans in Sumatra, Indonesia*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Nixon, S., Plumtre, A.J., Pintea, L. Hart, J.A., Amsini, F., Bahati, E., Delattre, E., Kaghoma, C.K., Kujirakwinja, D., Kyungu, J.C., Mufabule, K., Nishuli, R. and Ngobobo, P. (2012). *The forgotten gorilla; historical perspectives and future challenges for conserving Grauer's gorilla* (abstract). XXIV Congress of the International Primatological Society <<http://www.ips2012.org.mx/>>
- Oates, J.F., Tutin, C.E.G., Humle, T., Wilson, M.L., Baillie, J.E.M., Balmforth, Z., Blom, A., Boesch, C., Cox, D., Davenport, T., Dunn, A., Dupain, J., Duvall, C., Ellis, C.M., Farmer, K.H., Gatti, S., Greengrass, E., Hart, J., Herbinger, I., Hicks, C., Hunt, K.D., Kamenya, S., Maisels, F., Mitani, J.C., Moore, J., Morgan, B.J., Morgan, D.B., Nakamura, M., Nixon, S., Plumtre, A.J., Reynolds, V., Stokes, E.J. and Walsh, P.D. (2008). *Pan troglodytes*. In: IUCN 2012. *IUCN Red List of Threatened Species*. Version 2012.2.
- Pereboom, Z., Stevens, J. and Van der Eerden, I. (2011). *International Studybook for Bonobo Pan paniscus*. Antwerp, Royal Zoological Society of Antwerp.
- Pereira, H.M., Leadley, P.W., Proenca, V., Alkemade, R., Scharlemann, J.P.W., Fernandez-Manjarres, J.F., Araujo, M.B., Balvanera, P., Biggs, R., Cheung, W.W.L., Chini, L., Cooper, H.D., Gilman, E.L., Guenette, S., Hurr, G.C., Huntington, H.P., Mace, G.M., Oberdorff, T., Revenga, C., Rodrigues, P., Scholes, R.J., Sumaila, U.R. and Walpole, M. (2010). *Scenarios for Global Biodiversity in the 21st Century*. *Science* 330:1496-1502

- Plumptre, A., Kujirakwinja, Moyer, D., Driciru, M. and Rwetsiba, A. (2010) Greater Virunga Landscape Large Mammal Surveys, 2010. Unpublished report. Wildlife Conservation Society.
- Raufu, A. (1999). Saving Nigeria's Primates. Blogpost on WWF website 27. April 1999. Accessible on: <http://wwf.panda.org/?1943/Saving-Nigerias-primates> (accessed February 2013).
- Redmond, I. (1989). Trade in Gorillas and Other Primates in the People's Republic of Congo. A Report for the International Primate Protection League.
- Rijksen, H. D., and Meijaard, E. (1999). Our Vanishing Relative. The Status of Wild Orangutans at the Close of the Twentieth Century. Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Robbins, M.M., Gray, M., Fawcett, K.A., Nutter, F.B., Uwingeli, P., Mburanumwe, I., Kagoda, E., Basabose, A., Stoinski, S. T., Cranfield, M. R., Byamukama, J., Spelman, L.H. and Robbins, A.M. (2011). Extreme Conservation Leads to Recovery of the Virunga Mountain Gorillas. *PLoS ONE* 6(6):e19788. doi:10.1371/journal.pone.0019788
- Ross, S. (2009). North American Regional Chimpanzee Studbook (Pan troglodytes). Chicago, IL, Lincoln Park Zoo.
- Savage, T.S., Wyman, J. (1847). Notice of the external characters and habits of Troglodytes gorilla, a new species of orang from the Gaboon River, osteology of the same. *Boston J Nat Hist* 5, pp. 417-443.
- Schaumburg, F., Mugisha, L., Peck, B., Becker, K., Gillespie, T. R., Peters, G., *et al.* (2012). Drug-Resistant Human Staphylococcus Aureus in Sanctuary Apes Pose a Threat to Endangered Wild Ape Populations. *American Journal of Primatology*, 74(12), 1071-1075.
- Tanna, A. (2012). Mining by China fuels great ape trafficking from Guinea. November 7, 2012. Blog site: who gives a monkey, accessible on: whogivesamonkeys.com
- Teleki, G. (1980). Hunting and trapping wildlife in Sierra Leone: Aspects of exploitation and exportation. Report submitted to Office of President, Sierra Leone; World Wildlife Fund-U.S.; World Wildlife Fund-International.
- UNODC (2010). The Globalization of Crime: a Transnational Organized Crime Threat Assessment. United Nations Office on Drugs and Crime, Vienna, Austria.
- Unwin, S., Robinson, I., Schmidt, V., Colin, C., Ford, L. and Humle, T. (2012). Does Confirmed Pathogen Transfer between Sanctuary Workers and Great Apes Mean that Reintroduction Should not Occur? Commentary on "Drug-Resistant Human Staphylococcus aureus Findings in Sanctuary Apes and Its Threat to Wild Ape Populations". *American Journal of Primatology*, 74(12), 1076-1083.
- Van der Helm, F. and Spruit, I. (1988). Non-human Primates in the Netherlands: A Survey Report of Import and Export, Ownership and Use. TRAFFIC and the International Primate Protection League.
- Van Vliet, N., Nebesse, C., Gambalemoke, S., Akaibe, D. and Nasi, R. (2012). The bushmeat market in Kisangani, Democratic Republic of Congo: implications for conservation and food security. *Oryx* 46:2, pp. 196–203.
- Visconti, P., Pressey R.L., Giorgini D., Maiorano L., Bakkenes M., Boitani L., Alkemade R., Falcucci A., Chiozza F. and Rondinini C. (2011). Future hotspots of terrestrial mammal loss. *Phil. Trans. R. Soc. B.* 366:1578, pp. 2693-2702.
- Wich, S. A., Meijaard E., Marshall A. J., Husson S., Ancrenaz M., Lacy R. C., van Schaik C. P., Sugardjito J., Simorangkir T., Traylor-Holzer K., Doughty M., Supriatna J., Dennis R., Gumal M., Knott C.D. and Singleton I. (2008). Distribution and conservation status of the orang-utan (*Pongo spp.*) on Borneo and Sumatra: How many remain? *Oryx* 42:03, pp. 329– 339.
- Wich, S., Riswan, J., Jenson, J., Refisch, J., and Nellemann, C. (eds.) (2011). Orangutans and the Economics of Sustainable Forest Management in Sumatra. United Nations Environment Programme, GRID-Arendal: Arendal, Norway.
- Wilms, T. and Bender, U. (2011). International Studbook for the Western Lowland Gorilla *Gorilla g. gorilla*. Frankfurt am Main, Frankfurt Zoo.
- Wolfe, N.D., Daszak, P., Kilpatrick, A.M. and Burke, D.S. (2005). Bushmeat hunting deforestation, and prediction of zoonoses emergence. *Emerging Infectious Diseases*, 11(12), 1822-1827.





www.unep.org

United Nations Environment Programme
P.O. Box 30552 - 00100 Nairobi, Kenya
Tel.: +254 20 762 1234
Fax: +254 20 762 3927
e-mail: unep@unep.org
www.unep.org



A Centre Collaborating with UNEP

GRID-Arendal
Teaterplassen 3
N-4836 Arendal
Norway
grid@grida.no
www.grida.no



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